Mehralinejadian, Somaye; Moussavi, Ahmad; Sahebi, Shervin
Skew π-Baer polynomial rings. (English) Zbl 07956102
Asian-Eur. J. Math. 17, No. 2, Article ID 2450014, 16 p. (2024).

MSC:

16D15 1-sided ideals (MSC2000)
16D40 Free, projective, and flat modules and ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Keywords:
(σ,δ)-compatible ring

Full Text: DOI

References:

[1] Berberian, S. K., Baer $*$-Rings (Springer-Verlag, Berlin-Heidelberg-New York, 1972). · Zbl 0242.16008
[2] Berberian, S. K., Baer rings and Baer $*$-rings (University of Texas, Austin, 1991).
[3] Birkenmeier, G. F., Baer rings and quasi-continuous rings have MDSN, Pacific J. Math.97 (1981) 283-292. · Zbl 0432.16010
[4] Birkenmeier, G. F., Park, J. K. and Rizvi, S. T., Extensions of Rings and Modules (Birkhäuser, New York, 2013). · Zbl 1291.16001
[5] Birkenmeier, G. F., Tercan, A. and Yücel, C. C., The extending condition relative to sets of submodules, Comm. Algebra.42 (2014) 764-778. · Zbl 1297.16007
[6] Birkenmeier, G. F., Kara, Y. and Tercan, A., \(\pi \)-Baer rings, J. Algebra Appl.16 (2018) 1-19. · Zbl 1416.16019
[7] Chatters, A. W. and Hajarnavis, C. R., Rings with Chain Conditions (Pitman, Boston, 1980). · Zbl 0446.16001
[8] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-423. · Zbl 0204.04502
[9] Fuchs, L., Infinite Abelian Groups I (Academic Press, New York, 1970). · Zbl 0209.05503
[10] Goodearl, K. R., Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math.13(4) (1983) 573-618. · Zbl 0532.16002
[11] Goodearl, K. R., Prime ideals in skew polynomial rings and quantized Weyl algebras, J. Algebra150 (1992) 324-377. · Zbl 0779.16010
[12] Goodearl, K. R. and Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, Cambridge, 2004). · Zbl 1101.16001
[13] Habibi, M., Moussavi, A. and Manaviyat, R., On skew quasi-Baer rings, Comm. Algebra38 (2010) 3637-3648. · Zbl 1213.16016
[14] Han, J., Hirano, Y. and Kim, H., Semiprime ore extensions, Comm. Algebra28 (2000) 3795-3801. · Zbl 0965.16015
[15] Han, J., Skew polynomial rings over \(\sigma \)-quasi-Baer rings and \(\sigma \)-principally quasi-Baer rings, J. Kor. Math. Soc.42(1) (2005) 53-63. · Zbl 1066.16027
[16] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032
[17] Hirano, Y., On ordered monoid rings over a quasi-Baer rings, Comm. Algebra29 (2001) 2089-2095. · Zbl 0996.16020
[18] Hirano, Y., On annihilator ideals of a polynomail ring over noncommutative ring, J. Pure Appl. Algebra168(1) (2002) 45-52. · Zbl 1007.16020
[19] Hong, C. Y., Kim, N. K. and Kwak, T. K., Ore extensions of Baer and P.P.-ring, J. Pure Appl. Algebra151 (2000) 215-226. · Zbl 0982.16021
[20] Kaplansky, I., Rings of Operators (Benjamin, New York, 1968). · Zbl 0174.18503
[21] Krempa, J., Some examples of reduced rings, Algebra Colloq.3 (1996) 289-300. · Zbl 0859.16019
[22] Lam, T. Y., Lectures on modules and rings, Graduate Texts in Mathematics, Vol. 189 (Springer, New York, 1999). · Zbl 0911.16001
[23] Letzter, E. S. and Wang, L., Notherian skew inverse power series rings, Algebra. Represent. Theory13 (2010) 303-314. · Zbl 1217.16038
[24] Manaviyat, R., Moussavi, A. and Habibi, M., On skew inverse Laurent serieswise Armendariz rings, Comm. Algebra40(1)

(2012) 138-156. · Zbl 1261.16045

[25] Nasr-Isfahani, A.R. and Moussavi, A., On ore extensions of quasi-Baer rings, J. Algebra Appl.7(2) (2008) 211-224. · Zbl 1157.16008

[26] Nasr-Isfahani, A. R. and Moussavi, A., Baer and quasi-Baer differential polynomial rings, Comm. Algebra36 (2019) 3533-3542. · Zbl 1154.16019

[27] Paykan, K. and Moussavi, A., Special properties of diffreential inverse power series rings, J. Algebra Appl.15(9) (2016) 1650181. · Zbl 1375.16019

[28] Paykan, K. and Moussavi, A., Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Comm. Algebra45(6) (2017) 2306-2324. · Zbl 1395.16048

[29] Paykan, K., Skew inverse power series rings over a ring with projective socle, Czechoslovak Math. J.67(2) (2017) 389-395. · Zbl 1458.16050

[30] Paykan, K. and Moussavi, A., Study of skew inverse Laurent series rings, J. Algebra Appl.16(11) (2017) 1750221. · Zbl 1392.16041

[31] Paykan, K. and Moussavi, A., Differential extensions of weakly principally quasi-Baer rings, Acta Math. Vietnam.44(4) (2019) 977-991. · Zbl 1466.16019

[32] Pollingher, A. and Zaks, A., On Baer and quasi-Baer rings, Duke Math. J.37 (1970) 127-138. · Zbl 0219.16010

[33] Rickart, C. E., Banach algebras with an adjoint operation, Ann. Math.47(2) (1946) 528-550. · Zbl 0060.27103

[34] Schur, I., Uber vertauschbare lineare Differentialausdrucke, Sitzungsber, Berliner Math. Ges.4 (1905) 2-8. · Zbl 36.0387.01

[35] Tuganbaev, D. A., Rings of skew-Laurent series and rings of principal ideals, Vestn. MGU, Ser. I. Mat. Mekh.5 (2000) 55-57. · Zbl 0991.16036

[36] Tuganbaev, D. A., Uniserial skew-Laurent series rings, Vestn. MGU, Ser. I Mat. Mekh.1 (2000) 51-55.

[37] Tuganbaev, D. A., Laurent series ring and pseudo-differential operator rings, J. Math. Sci.128(3) (2005) 2843-2893. · Zbl 1122.16033

Khoshnood, B.; **Moussavi, A.**
Weakly p.q-Baer skew Hurwitz series rings. (English) Zbl 07956078
Asian-Eur. J. Math. 17, No. 1, Article ID 2350235, 16 p. (2024).

MSC:

16D40	Free, projective, and flat modules and ideals in associative algebras
16W60	Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36	Ordinary and skew polynomial rings and semigroup rings

Keywords:

π-Baer; weakly principally Quasi-Baer; σ-weakly rigid; σ-compatible

Full Text: DOI

References:

[1] Ahmadi, M., Singular ideals of skew Hurwitz polynomial rings, Rend. Circ. Mat. Palermo \((2)68 (2019) 589593\). · Zbl 1425.16020

[2] Ahmadi, M., Moussavi, A. and Nourozi, V., On skew Hurwitz serieswise Armendariz rings, Asian-Europ. J. Math.7(3) (2014) 1450036. · Zbl 1308.16033

[3] Ahmadi, M., Moussavi, A. and Nourozi, V., Nilradicals of skew Hurwitz series of rings, Matematiche70(1) (2015) 125-136. · Zbl 1329.16015

[4] Benhissi, A., Ideal structure of Hurwitz series rings, Contrib. Algebra Geom.48(1) (2007) 251-256. · Zbl 1114.13016

[5] Benhissi, A., PF and PP-properties in Hurwitz series ring, Bull. Math. Soc. Sci. Math. Roumanie (NS)54(3) (2011) 203-211. · Zbl 1249.13015

[6] Benhissi, A. and Koja, F., Basic properties of Hurwitz series rings, Ric. Mat.61(2) (2012) 255-273. · Zbl 1318.13034

[7] Birkenmeier, G. F., Kara, Y. and Tercan, A., \(\pi \)-Baer rings, J. Algebra Appl.17(2) (2001) 1850029. · Zbl 1416.16019

[8] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., On polynomial extensions of principally quasi-Baer rings, Kyungpook Math. J.40 (2000) 247-253. · Zbl 0987.16017

[9] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., Principally quasi-Baer rings, Comm. Algebra29(2) (2001) 639-660. · Zbl 0991.16005

[10] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., Polynomial extensions of Baer and quasi-Baer rings, J. Pure Appl. Algebra159(1) (2001) 25-42. · Zbl 0987.16018

[11] Cheng, Y. and Huang, F. K., A note on extensions of principally quasi-Baer rings, Taiwanese J. Math.12(7) (2008) 1721-1731. · Zbl 1169.16015

[12] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-424. · Zbl 0204.04502

[13] Fliess, M., Sur divers produits de sries formelles, Bull. Soc. Math. France102 (1974) 181-191. · Zbl 0313.13021

[14] Ghanem, M., Some properties of Hurwitz series ring, Int. Math. Forum6(40) (2007) 1973-1981. · Zbl 1246.13027

[15] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107 (2005) 207-224. · Zbl 1081.16032

[16] Hassanein, A. M., Clean rings of skew Hurwitz series, Matematiche62(1) (2007) 47-54. · Zbl 1150.16029

[17] Hirano, Y., On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra168 (2002) 45-52. · Zbl 1007.16020

[18] Hong, C. Y., Kim, N. K. and Kwak, T. K., Ore extensions of Baer and p.p.-ring, J. Pure Appl. Algebra151 (2000) 215-226. · Zbl 0982.16021

[19] Kaplansky, I., Projections in Banach algebras, Ann. Math.53(2) (1951) 235-249. · Zbl 0042.12402

[20] Kaplansky, I., Rings of Operators (Benjamin, New York, 1968). · Zbl 0174.18503

[21] Keigher, W. F., Adjunctions and comonads in differential algebra, Pacific J. Math.248 (1975) 99-112. · Zbl 0327.12104

[22] Keigher, W. F., On the ring of Hurwitz series, Comm. Algebra25(6) (1997) 1845-1859. · Zbl 0884.13013

[23] Keigher, W. F. and Pritchard, F. L., Hurwitz series as formal functions, J. Pure Appl. Algebra146 (2000) 291-304. · Zbl 0978.12007

[24] Kim, D. K. and Lim, J. W., On a conjecture posed by Benhissi and Koja, Comm. Algebra48(6) (2020) 2655-2661. · Zbl 1440.13015

[25] Krempa, J., Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[26] Lim, J. W. and Oh, D. Y., Composite Hurwitz rings satisfying the ascending chain condition on principal ideals, Kyungpook Math. J.56 (2016) 1115-1123. · Zbl 1386.13053

[27] Lim, J. W. and Oh, D. Y., Chain conditions on composite Hurwitz series rings, Open Math.15(1) (2017) 1161-1170. · Zbl 1386.13010

[28] Liu, Z., Hermite and PS-rings of Hurwitz series, Comm. Algebra28(1) (2000) 299-305. · Zbl 0949.16043

[29] Liu, Z., A note on principally quasi-Baer rings, Comm. Algebra30(8) (2002) 3885-3890. · Zbl 1018.16023

[30] Liu, Z. and Zhao, R., A generalization of PP-rings and p.q.-Baer rings, Glasg. Math. J.48(2) (2006) 217-229. · Zbl 1110.16003

[31] Maeda, S., On a ring whose principal right ideals generated by idempotents form a lattice, J. Sci. Hiroshima Univ. A24 (1960) 509-525. · Zbl 0204.04503

[32] Majidinya, A. and Moussavi, A., On APP skew generalized power series rings, Studia Sci. Math. Hungar.50(4) (2013) 436-453. · Zbl 1307.16037

[33] Majidinya, A. and Moussavi, A., Weakly principally quasi-Baer rings, J. Algebra Appl.15(1) (2016) 1650002. · Zbl 1343.16001

[34] Manaviyat, R., Moussavi, A. and Habibi, M., Principally quasi-Baer skew power series rings, Comm. Algebra38(6) (2010) 2164-2176. · Zbl 1202.16024

[35] Manaviyat, R., Moussavi, A. and Habibi, M., Principally quasi-Baer skew power series modules, Comm. Algebra41(4) (2013) 1278-1291. · Zbl 1272.16041

[36] Nasr-Isfahani, A. R. and Moussavi, A., On weakly rigid rings, Glasg. Math. J.51(3) (2009) 425-440. · Zbl 1184.16026

[37] Paykan, K., Nilpotent elements of skew Hurwitz series rings, Rend. Circ. Mat. Palermo (2)65(3) (2016) 451458. · Zbl 1353.16046

[38] Paykan, K., Principally quasi-Baer skew Hurwitz series rings, Boll. Unione Mat. Ital.10(4) (2017) 607-616. · Zbl 1381.16042

[39] Paykan, K. and Moussavi, A., Differential extensions of weakly principally quasi-Baer rings, Acta Math. Vietnam.44(4) (2019) 977-991. · Zbl 1466.16019

[40] Rickart, C. E., Banach algebras with an adjoint operation, Ann. Math.47 (1946) 528-550. · Zbl 0060.27103

[41] Salem, R. M., Skew Hurwitz series over quasi Baer and PS-rings, Matematiche67(2) (2012) 14-25. · Zbl 1264.16044

[42] Taft, E. T., Hurwitz invertibility of linearly recursive sequences, Congr. Numer.73 (1990) 37-40. · Zbl 0694.16006

[43] Tominaga, H., On \(s\)-unital rings, Math. J. Okayama Univ.18(2) (1976) 117-134. · Zbl 0335.16020

Aramideh, Nasibeh; Moussavi, Ahmad
$c\mathfrak{P}$-Baer polynomial extensions. (English) Zbl 07948574
Bull. Iran. Math. Soc. 50, No. 4, Paper No. 52, 21 p. (2024).

Summary: A ring R is called right $c\mathfrak{P}$-Baer if the right annihilator of a cyclic projective right R-module in R is generated by an idempotent. These rings are a generalization of the right p.q.-Baer rings and abelian rings. Following Birkenmeier and Heider (Commun Algebra 47(3):1348–1375, 2019 doi:10.1080/00927872.2018.1506462), we investigate the transfer of the $c\mathfrak{P}$-Baer property between a ring R and many polynomial extensions (including skew polynomials, skew Laurent polynomials, skew power series, skew inverse Laurent series), and monoid rings. As a consequence, we answer a question posed by Birkenmeier and Heider (2019).

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16S50 Endomorphism rings; matrix rings

Keywords:

right $c\mathfrak{P}$-Baer ring; right p.q.-Baer ring; monoid ring; skew polynomial ring; skew inverse Laurent series ring

Full Text: DOI

References:

[1] Armendariz, E.P.: A note on extensions of Baer and p.p.-rings. J. Austral. Math. Soc. 18(4):470-473 (1974). doi:10.1017/S1446788700029190 · Zbl 0292.16009

[2] Birkenmeier, GF; Heider, BJ, Annihilators and extensions of idempotent generated ideals, Commun. Algebra., 47, 3, 1348-1375, 2019 · Zbl 1444.16002 · doi:10.1080/00927872.2018.1506462

[3] Birkenmeier, GF; Kim, JY; Park, JK, On polynomial extensions of principally quasi-Baer rings, Kyungpook Math. J., 40, 2, 247-253, 2000 · Zbl 0987.16017

[4] Birkenmeier, GF; Kim, JY; Park, JK, On quasi-Baer rings, Contemp. Math., 259, 67-92, 2000 · Zbl 0974.16006 · doi:10.1090/conm/259/04088

[5] Birkenmeier, GF; Kim, JY; Park, JK, Polynomial extensions of Baer and quasi-Baer Rings, J. Pure Appl. Algebra., 159, 1, 25-42, 2001 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[6] Birkenmeier, GF; Kim, JY; Park, JK, Principally quasi-Baer rings, Commun. Algebra., 29, 2, 639-660, 2001 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[7] Birkenmeier, GF; Müller, BJ; Rizvi, ST, Modules in which every fully invariant submodule is essential in a direct summand, Commun. Algebra., 30, 3, 1395-1415, 2002 · Zbl 1006.16010 · doi:10.1080/00927870209342387

[8] Birkenmeier, GF; Park, JK, Triangular matrix representations of ring extensions, J. Algebra., 265, 2, 457-477, 2003 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[9] Chen, JL; Yang, XD; Zhou, YQ, On strongly clean matrix and triangular matrix rings, Commun. Algebra., 34, 10, 3659-3674, 2006 · Zbl 1114.16024 · doi:10.1080/00927870600860791

[10] Cheng, Y., Huang, F.: A note on extensions of principally quasi-Baer rings. Taiwan. J. Math. 12(7): 1721-1731 (2008). doi:10.11650/twjm/1500405082 · Zbl 1169.16015

[11] Clark, WE, Twisted matrix units semigroup algebras, Duke Math. J., 34, 3, 417-423, 1967 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[12] Cohn, PM, Reversible rings, Bull. Lond. Math. Soc., 31, 6, 641-648, 1999 · Zbl 1021.16019 · doi:10.1112/S0024609399006116

[13] Goodearl, KR, Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math., 13, 4, 573-618, 1983 · Zbl 0532.16002 · doi:10.1216/RMJ-1983-13-4-573

[14] Habeb, JM, A note on zero commutative and duo rings, Math. J. Okayama Univ., 32, 1, 73-76, 1990 · Zbl 0758.16007

[15] Habibi, M., On inverse skew Laurent series extensions of weakly rigid rings, Commun. Algebra., 45, 1, 151-161, 2017 · Zbl 1368.16045 · doi:10.1080/00927872.2016.1175571

[16] Habibi, M.; Moussavi, A.; Alhevaz, A., The McCoy condition on ore extensions, Commun. Algebra., 41, 1, 124-141, 2013 · Zbl 1269.16019 · doi:10.1080/00927872.2011.623289

[17] Hashemi, E.; Hamidizadeh, M.; Alhevaz, A., On clean and regular elements of noncommutative ring extensions, Commun. Algebra., 47, 4, 1650-1661, 2019 · Zbl 1472.16039 · doi:10.1080/00927872.2018.1513013

[18] Hashemi, E.; Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar., 107, 3, 207-224, 2005 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[19] Hirano, Y., On orderd monoid rings over a quasi-Baer rings, Commun. Algebra., 29, 2089-2095, 2001 · Zbl 0996.16020 · doi:10.1081/AGB-100002171

[20] Huh, C.; Lee, Y.; Smoktunowcz, A., Armendariz rings and semicommutative rings, Commun. Algebra., 30, 2, 751-761, 2002 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[21] Jordan, DA, Bijective extensions of injective ring endomorphisms, J. Lond. Math. Soc., 25, 2, 435-448, 1982 · Zbl 0486.16002 · doi:10.1112/jlms/s2-25.3.435

[22] Kaplansky, I., Rings of Operators, 1968, New York: W. A. Benjamin, New York · Zbl 0174.18503

[23] Kim, NK; Lee, Y., Armendariz rings and reduced rings, J. Algebra., 223, 2, 477-488, 2000 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017

[24] Krempa, J., Some examples of reduced rings, Algebra Colloq., 3, 4, 289-300, 1996 · Zbl 0859.16019

[25] Letzter, ES; Wang, L., Notherian skew inverse power series rings, Algebra. Represent. Theory, 13, 3, 303-314, 2010 · Zbl 1217.16038 · doi:10.1007/s10468-008-9123-4

[26] Liang, L. I., Wang, L., Liu, Z.: On a generalization of semicommutative rings. Taiwan. J. Math. 11(5):1359-1368 (2007). doi:10.11650/twjm/1500404869 · Zbl 1142.16019

[27] Maeda, S.: On a ring whose principal right ideals generated by idempotents form a lattice. J. Sci. Hiroshima Univ. Ser. A. 24(3):509-525 (1960). doi:10.32917/hmj/1555615829 · Zbl 0204.04503

[28] Manaviyat, R.; Moussavi, A.; Habibi, M., Principally quasi-Baer skew power series modules, Commun. Algebra., 41, 4, 1278-1291, 2013 · Zbl 1272.16041 · doi:10.1080/00927872.2011.615357

[29] Mason, G., Reflexive ideals, Commun. Algebra., 9, 17, 1709-1724, 1981 · Zbl 0468.16024 · doi:10.1080/00927878108822678

[30] Nasr-Isfahani, AR; Moussavi, A., Baer and quasi-Baer differential polynomial rings, Commun. Algebra., 36, 9, 3533-3542, 2019 · Zbl 1154.16019 · doi:10.1080/00927870802104337

[31] Nasr-Isfahani, AR; Moussavi, A., On ore extensions of quasi-Baer rings, J. Algebra Appl., 7, 2, 211-224, 2008 · Zbl 1157.16008 · doi:10.1142/S0219498808002771

[32] Nasr-Isfahani, AR; Moussavi, A., On skew power serieswise Armendariz rings, Commun. Algebra., 39, 9, 3114-3132, 2011 · Zbl 1241.16029 · doi:10.1080/00927872.2010.495932

[33] Nasr-Isfahani, AR; Moussavi, A., On weakly rigid rings, Glasg. Math. J., 51, 3, 425-440, 2009 · Zbl 1184.16026 · doi:10.1017/S0017089509005084

[34] Passman, DS, The Algebraic Structure of Group Rings, 1977, New York: John Wiley, New York · Zbl 0368.16003

[35] Paykan, K.: Skew inverse power series rings over a ring with projective socle. Czechoslovak Math. J. 67(2):389-395 (2017). doi:10.21136/CMJ.2017.0672-15 · Zbl 1458.16050

[36] Paykan, K.; Moussavi, A., Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Commun. Algebra., 45, 6, 2306-2324, 2017 · Zbl 1395.16048 · doi:10.1080/00927872.2016.1233198

[37] Paykan, K.; Moussavi, A., Special properties of differential inverse power series rings, J. Algebra Appl., 15, 10, 1650181, 2016 · Zbl 1375.16019 · doi:10.1142/S0219498816501814

[38] Paykan, K.; Moussavi, A., Study of skew inverse Laurent series rings, J. Algebra Appl., 16, 11, 1750221, 2017 · Zbl 1392.16041 · doi:10.1142/S0219498817502218

[39] Pollingher, A.; Zaks, A., On Baer and quasi-Baer rings, Duke Math. J., 37, 11, 127-138, 1970 · Zbl 0219.16010 · doi:10.1142/10.1215/S0012-7094-70-03718-X

[40] Ribenboim, P., Noetherian rings of generalized power series, J. Pure Appl. Algebra., 79, 3, 293-312, 1992 · Zbl 0761.13007 · doi:10.1016/0022-4049(92)90056-L

[41] Rickart, CE, Banach algebras with an adjoint operation, Ann. Math., 47, 3, 528-550, 1946 · Zbl 0060.27103 · doi:10.2307/1969091

[42] Shin, G., Prime ideals and sheaf representation of a pseudo symmetric ring, Trans. Am. Math. Soc., 184, 43-60, 1973 · Zbl 0283.16021 · doi:10.2307/1996398

[43] Tuganbaev, DA, Laurent series ring and pseudo-differential operator rings, J. Math. Sci., 128, 3, 2843-2893, 2005 · Zbl 1122.16033 · doi:10.1007/s10958-005-0244-6

[44] Tuganbaev, DA, Rings of skew-Laurent series and principal ideal rings., Vestn. MGU Ser. I. Mat. Mekh., 5, 55-57, 2000 · Zbl 0991.16036

[45] Tuganbaev, DA, Uniserial skew-Laurent series rings, Vestn. MGU Ser. I Mat. Mekh., 1, 51-55, 2000

[46] Zhou, Y., A simple proof of a theorem on quasi-Baer rings, Arch. Math., 81, 3, 253-254, 2003 · Zbl 1058.16011 · doi:10.1007/s00013-003-0824-y

Ahmadi, M.; Moussavi, A.
Quasi-Baer $*$-ring characterization of Leavitt path algebras. (English) Zbl 07918237
Sib. Math. J. 65, No. 3, 648-662 (2024).

Summary: We say that a graded ring ($*$-ring) R is a graded quasi-Baer ring (graded quasi-Baer $*$-ring) if, for each graded ideal I of R, the right annihilator of I is generated by a homogeneous idempotent (projection). We prove that a Leavitt path algebra is quasi-Baer (quasi-Baer $*$) if and only if it is graded quasi-Baer (graded quasi-Baer $*$). We show that a Leavitt path algebra is quasi-Baer (quasi-Baer $*$) if its zero component is quasi-Baer (quasi-Baer $*$). However, we give some example that showing that the converse implication fails. Finally, we characterize the Leavitt path algebras that are quasi-Baer $*$-rings in terms of the properties of the underlying graph.

MSC:

16S88 Leavitt path algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
46L05 General theory of C^*-algebras

Keywords:

Leavitt path algebra; quasi-Baer ring; quasi-Baer $*$-ring; graded ring; corner skew Laurent polynomial ring

Full Text: DOI

References:

[1] Abrams, G.; Aranda Pino, G., The Leavitt path algebra of a graph, J. Algebra, 293, 2, 319-334, 2005 · Zbl 1119.16011 · doi:10.1016/j.jalgebra.2005.07.028

[2] Ara, P.; Moreno, MA; Pardo, E., Nonstable K-theory for graph algebras, Algebr. Represent. Theory, 10, 2, 157-178, 2007 · Zbl 1123.16006 · doi:10.1007/s10468-006-9044-z

[3] Abrams, G.; Bell, J.; Rangaswamy, KM, On prime non-primitive von Neumann regular algebras, Trans. Amer. Math. Soc., 366, 2375-2392, 2014 · Zbl 1336.16002 · doi:10.1090/S0002-9947-2014-05878-9

[4] Aranda Pino, G.; Rangaswamy, KM; Vaš, L., \(* \)-Regular Leavitt path algebras of arbitrary graphs, Acta Math. Sinica, 28, 5, 957-968, 2012 · Zbl 1279.16003 · doi:10.1007/s10114-011-0106-8

[5] Abrams, G.; Rangaswamy, KM, Regularity conditions for arbitrary Leavitt path algebras, Algebr. Represent. Theory, 13, 319-334, 2010 · Zbl 1201.16016 · doi:10.1007/s10468-008-9125-2

[6] Ara, P.; Goodearl, KR, Leavitt path algebras of separated graphs, J. Reine Angew. Math., 669, 165-224, 2012 · Zbl 1281.46050

[7] Hazrat, R.; Vaš, L., Baer and Baer \(* \)-ring characterizations of Leavitt path algebras, J. Pure Appl. Algebra, 222, 39-60, 2018 · Zbl 1383.16024 · doi:10.1016/j.jpaa.2017.03.003

[8] Siles Molina, M., Algebras of quotients of path algebras, J. Algebra, 319, 12, 329-348, 2008 · Zbl 1160.16012 · doi:10.1016/j.jalgebra.2007.09.017

[9] Clark, WE, Twisted matrix units semigroup algebras, Duke Math. J., 34, 417-424, 1997 · Zbl 0204.04502

[10] Berberian, SK, Baer \(\ast \)-Rings, 1972, Berlin, Heidelberg, and New York: Springer, Berlin, Heidelberg, and New York · Zbl 0242.16008 · doi:10.1007/978-3-642-15071-5

[11] Hazrat, R., Leavitt path algebras are graded von Neumann regular rings, J. Algebra, 401, 220-233, 2014 · Zbl 1303.16005 · doi:10.1016/j.jalgebra.2013.10.037

[12] Hazrat, R.; Vaš, L., K-Theory classification of graded ultramatricial algebras with involution, Forum Math., 31, 2, 419-463, 2018 · Zbl 1453.16045 · doi:10.1515/forum-2017-0268

[13] Birkenmeier, GF; Park, JK; Rizvi, ST, Extensions of Rings and Modules, 2013, New York: Birkhäuser, New York · Zbl 1291.16001 · doi:10.1007/978-0-387-92716-9

[14] Ara, P.; González-Barroso, MA; Goodearl, KR; Pardo, E., Fractional skew monoid rings, J. Algebra, 278, 104-126, 2004 · Zbl 1063.16033 · doi:10.1016/j.jalgebra.2004.03.009

[15] Vaš, L., Annihilator ideals of graph algebras, J. Algebraic Combin., 58, 331-353, 2023 · Zbl 1536.16029 · doi:10.1007/s10801-022-01178-3

[16] Goodearl, KR, Leavitt path algebras and direct limits, Contemp. Math., 480, 165-187, 2009 · Zbl 1194.16012 · doi:10.1090/conm/480/09374

[17] Abrams, G.; Ara, P.; Siles Molina, M., Leavitt Path Algebras, 2017, London: Springer, London · Zbl 1393.16001 · doi:10.1007/978-1-4471-7344-1

[18] Clark, LO; Martin Barquero, D.; Martin Gonzalez, C.; Siles Molina, M., Using the Steinberg algebra model to determine the center of any Leavitt path algebra, Israel J. Math., 230, 23-44, 2019 · Zbl 1469.16063 · doi:10.1007/s11856-018-1816-8

[19] Ahmadi, M.; Golestani, N.; Moussavi, M., Generalized quasi-Baer \(\ast \)-rings and Banach \(\ast \)-algebras, Comm. Algebra, 48, 5, 2207-2247, 2020 · Zbl 1439.16039 · doi:10.1080/00927872.2019.1710841

[20] Birkenmeier, GF; Park, JK, Self-adjoint ideals in Baer \(\ast \)-rings, Comm. Algebra, 28, 9, 4259-4268, 2000 · Zbl 0982.16024 · doi:10.1080/00927870008827088

[21] Rangaswamy, KM, On generators of two-sided ideals of Leavitt path algebras over arbitrary graphs, Comm. Algebra, 42, 7, 2859-2868, 2014 · Zbl 1300.16006 · doi:10.1080/00927872.2013.765008

Moradiani, Sara; **Moussavi, Ahmad**; **Zahiri, Masoome**

A characterization of Goldie extending trivial Morita contexts. (English) Zbl 07888132

J. Algebra Appl. 23, No. 8, Article ID 2450098, 12 p. (2024).

Summary: A module M is said to be extending (Goldie extending) if for each submodule $X \leq M$, there exists a direct summand D of M such that X is essential in D (if for every submodule X of M there exists a direct summand D of M such that $X \cap D$ is essential in both X and D). In this paper, a necessary and sufficient condition is obtained for a trivial Morita context ring to be right Goldie-extending.

MSC:

16D15 1-sided ideals (MSC2000)
16D40 Free, projective, and flat modules and ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Keywords:

right $\mathcal{G}$-extending rings; Morita context

Full Text: DOI

References:

[1] Akalan, E., Birkenmeier, G. F. and Tercan, A., Goldie extending modules, Commun. Algebra37(2) (2009) 663-683. · Zbl 1214.16005

[2] Akalan, E., Birkenmeier, G. F. and Tercan, A., A characterization of Goldie extending modules over Dedekind domains, J. Algebra Appl.10(6) (2011) 1291-1299. · Zbl 1274.13016

[3] Akalan, E., Birkenmeier, G. F. and Tercan, A., Characterizations of extending modules and \(\mathcal{G} \)-extending generalized triangular matrix rings, Commun. Algebra40 (2012) 1069-1085. · Zbl 1248.16005

[4] Amitsur, S. A., Rings of quotients and Morita contexts, J. Algebra17 (1971) 273-298. · Zbl 0221.16014

[5] Birkenmeier, G. F., Mutlu, F. T., Nebiyev, C., Sokmez, N. and Tercan, A., Goldie*-supplemented modules, Glasg. Math. J. A52 (2010) 41-52. · Zbl 1215.16006

[6] Birkenmeier, G. F., Park, J. K. and Rizvi, S. T., Generalized triangular matrix rings and the fully invariant extending property, Rocky Mountain J. Math.32(4) (2002) 1299-1319. · Zbl 1035.16024

[7] Chatters, A. W. and Khuri, S. M., Endomorphism rings of modules over nonsingular CS-rings, J. London Math. Soc.21(3) (1980) 434-444. · Zbl 0432.16017

[8] Clark, J., Lomp, C., Vanaja, N. and Wisbauer, R., Lifting Modules: Supplements and Projectivity in Module Theory (Springer Science and Business Media, 2008).

[9] Goldie, A. W., Semiprime rings with maximum condition, Proc. London Math. Soc.10 (1960) 201-220. · Zbl 0091.03304

[10] Goodearl, K. R., Ring Theory (Marcel Dekker, New York, 1976). · Zbl 0336.16001

[11] Goodearl, K. R., Singular torsion and the splitting properties, Memoirs of the American Mathematical Society, Vol. 124 (American Mathematical Society, 1972). · Zbl 0242.16018

[12] Goodearl, K. R., Ring Theory: Non-Singular Rings and Modules (Marcel Dekker, New York, 1976). · Zbl 0336.16001

[13] Haghany, A., Hopficity and co-hopficity for Morita contexts. Commun. Algebra27 (1999) 477-492. · Zbl 0921.16002

[14] Haghany, A. and Varadarajan, K., Study of formal triangular matrix rings, Commun. Algebra27 (1999) 5507-5525. · Zbl 0941.16005

[15] Krylov, P. A., Isomorphism of generalized matrix rings, Algebra Logic47(4) (2008) 258-262. · Zbl 1155.16302

[16] Krylov, P. A. and Tuganbaev, A. A., Modules over formal matrix rings, J. Math. Sci.171(2) (2010) 248-295. · Zbl 1283.16025

[17] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, Inc, 1990).

[18] Lam, T. Y., Lectures on Modules and Rings, , Vol. 189 (Springer Verlag, Berlin-Heidelberg, New York, 1999). · Zbl 0911.16001

[19] P. Loustaunau and J. Shapiro, Morita Contexts. Noncommutative Ring Theory (Athens, OH, 1989). Lecture Notes in Mathematics, Vol. 1448 (Berlin, Springer, 1990). · Zbl 0711.16006

[20] Marianne, M., Rings of quotients of generalized matrix rings, Commun. Algebra15 (1987) 1991-2015. · Zbl 0629.16013

[21] Mohammadi, R., Moussavi, A. and Zahiri, M., A Characterization of extending generalized triangular matrix rings, J. Algebra

Appl.20(2) (2021) 2150016. · Zbl 1509.16026

[22] Moradiani, S. and Moussavi, A., A characterization of extending trivial Morita contexts, J. Algebra Appl. (2023) 2350114. · Zbl 1533.16007

[23] Morita, K., Duality for modules and its applications to the theory of rings with minimum condition, Sci. Rep. Tokyo Kyoiku Diagaku Sect. A6 (1958) 83-142. · Zbl 0080.25702

[24] Müller, M., Rings of quotients of generalised matrix rings, Commun. Algebra15 (1987) 1991-2015. · Zbl 0629.16013

[25] Sands, A. D., Radicals and Morita contexts, J. Algebra24 (1973) 335-345. · Zbl 0253.16007

[26] P. F. Smith, Modules for which every submodule has a unique closure, Ring Theory (Granville, OH, 1992) (World Scientific Publication, New Jersey, River Edge, 1992), pp. 302-313. · Zbl 0853.16006

[27] Tang, G., Li, C. and Zhou, Y., Study of Morita contexts, Commun. Algebra42(4) (2014) 1668-1681. · Zbl 1292.16020

[28] Tercan, A., On certain CS-rings, Commun. Algebra23(2) (1995) 405-419. · Zbl 0820.16001

[29] Wu, D. and Wang, Y., Two open questions on Goldie extending modulesCommun. Algebra40(8) (2012) 2685-2692. · Zbl 1253.16004

[30] Zhou, Y., The fineness properties of Morita contexts, J. Algebra Appl.21(10) (2022) 2250205. · Zbl 1512.16027

Zahiri, M.; **Moussavi, A.**; **Moradiani, S.**; **Mohammadi, R.**

Extending property of trivial extension. (English) Zbl 1545.16006

Commun. Algebra 52, No. 4, 1703-1712 (2024).

A module is extending if every submodule is essential in a direct summand and a ring is extending if it is extending as a module. In this paper, the authors determine when the extending property of an R-bimodule M implies the trivial extension ring $R \propto M = \{(r, m) \colon r \in R,\ m \in M\}$ with componentwise addition and multiplication $(r, m)(s, n) = (rs, rn + ms)$ is extending.

The main result of the paper is a set of four conditions on the left annihilator of M in R each of which is equivalent to the trivial extension $R \propto M$ being extending as a right module.

Reviewer: Phillip Schultz (Perth)

MSC:

16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16S50 Endomorphism rings; matrix rings
16D50 Injective modules, self-injective associative rings

Keywords:

extending modules; trivial extensions

Full Text: DOI

References:

[1] Akalan, E., Birkenmeier, G. F., Tercan, A. (2012). Characterizations of extending modules and \(\mathcal{G} \)-extending generalized triangular matrix rings. Commun. Algebra40:1069-1085. · Zbl 1248.16005

[2] Birkenmeier, G. F., Park, J. K., Rizvi, S. T. (2002). Generalized triangular matrix rings and the fully invariant extending property. Rocky Mt. J. Math. 32(4):1299-1319. · Zbl 1035.16024

[3] Chatters, A. W., Khuri, S. M. (1980). Endomorphism rings of modules over nonsingular CS rings. J. London Math. Soc. 21(2):434-444. · Zbl 0432.16017

[4] Dung, N. V., Huynh, D. V., Smith, P. F., Wisbauer, R. (1994). Extending Modules. Pitman Research Notes in Mathematics Series, Vol. 313. Harlow/New York: Longman. · Zbl 0841.16001

[5] Ghahramani, H. (2013). Jordan derivations of trivial extensions. Bull. Iran. Math. Soc. 39(4):635-645. · Zbl 1320.47037

[6] Goodearl, K. R. (1972). Singular Torsion and the Splitting Properties, Memoirs of the American Mathematical Society, 124. Providence, RI: American Mathematical Society. DOI: . · Zbl 0242.16018

[7] Goodearl, K. R. (1976). Ring Theory: Non-Singular Rings and Modules. New York: Marcel Dekker. · Zbl 0336.16001

[8] Harada, M. (1982). On modules with extending properties. Osaka J. Math. 19:203-215. · Zbl 0491.16026

[9] Mohammadi, R., Moussavi, A., Zahiri, M. (2019). A characterization of extending generalized triangular matrix rings. J. Algebra Appl. DOI: .

[10] Mohamed, S. H., Müller, B. J. (1990). Continuous and Discrete Modules. London Mathematical Society Lecture Notes Series, Vol. 147. Cambridge: Cambridge University Press. · Zbl 0701.16001

[11] Rizvi, S. T., Roman, C. S. (2004). Baer and quasi-Baer modules. Commun. Algebra32(1):103-123. DOI: . · Zbl 1072.16007

[12] Santa-Clara, C. (1998). Extending modules with injective or semisimple summands. J. Pure Appl. Alg. 127:193-203. DOI: . · Zbl 0934.16003

[13] Utumi, Y. (1961). On continuous regular rings. Can. Math. Bull.4:63-69. DOI: . · Zbl 0178.36503

Danchev, Peter; Javan, Arash; Hasanzadeh, Omid; Doostalizadeh, Mina; Moussavi, Ahmad
Rings such that, for each unit u, $u^n - 1$ belongs to the $\Delta(R)$. arXiv:2411.09416
Preprint, arXiv:2411.09416 [math.RA] (2024).

Summary: We study in-depth those rings R for which, there exists a fixed $n \geq 1$, such that $u^n - 1$ lies in the subring $\Delta(R)$ of R for every unit $u \in R$. We succeeded to describe for any $n \geq 1$ all reduced π-regular $(2n-1)$-ΔU rings by showing that they satisfy the equation $x^{2n} = x$ as well as to prove that the property of being exchange and clean are tantamount in the class of $(2n-1)$-ΔU rings. These achievements considerably extend results established by Danchev (Rend. Sem. Mat. Univ. Pol. Torino, 2019) and Koşan et al. (Hacettepe J. Math. & Stat., 2020). Some other closely related results of this branch are also established.

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: arXiv

Danchev, Peter; Javan, Arash; Hasanzadeh, Omid; Moussavi, Ahmad
Rings Whose Non-Invertible Elements are Weakly Nil-Clean. arXiv:2407.10232
Preprint, arXiv:2407.10232 [math.RA] (2024).

Summary: In regard to our recent studies of rings with (strongly, weakly) nil-clean-like properties, we explore in-depth both the structural and characterization properties of those rings whose elements that are not units are weakly nil-clean. Group rings of this sort are considered and described as well.

Full Text: arXiv

Danchev, Peter; Javan, Arash; Hasanzadeh, Omid; Moussavi, Ahmad
Rings Whose Non-Invertible Elements Are Nil-Clean. arXiv:2405.09961
Preprint, arXiv:2405.09961 [math.RA] (2024).

Summary: We systematically study those rings whose non-units are a sum of an idempotent and a nilpotent. Some crucial characteristic properties are completely described as well as some structural results for this class of rings are obtained. This work somewhat continues two publications on the subject due to Diesl (J. Algebra, 2013) and Karimi-Mansoub et al. (Contemp. Math., 2018).

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: arXiv

Ahmadi, Morteza; Moussavi, Ahmad
Graded quasi-Baer $*$-ring characterization of Steinberg algebras. arXiv:2405.02997
Preprint, arXiv:2405.02997 [math.RA] (2024).

Summary: Given a graded ample, Hausdorff groupoid G, and an involutive field K, we consider the Steinberg algebra $A_K(G)$. We obtain necessary and sufficient conditions on G under which the annihilator of any graded ideal of $A_K(G)$ is generated by a homogeneous projection. This property is called graded quasi-Baer $*$. We use the Steinberg algebra model to characterize graded quasi-Baer $*$ Leavitt path algebras.

Full Text: arXiv OA License

Danchev, Peter; Hasanzadeh, Omid; Javan, Arash; Moussavi, Ahmad
Rings whose Non-Invertible Elements are Strongly Nil-Clean. arXiv:2404.10651
Preprint, arXiv:2404.10651 [math.RA] (2024).

Summary: We consider in-depth and characterize in certain aspects those rings whose non-units are strongly nil-clean in the sense that they are a sum of commuting nilpotent and idempotent. In addition, we examine those rings in which the non-units are uniquely nil-clean in the sense that they are a sum of a nilpotent and an unique idempotent. In fact, we succeeded to prove that these two classes of rings can completely be characterized in terms of already well-studied and fully described sorts of rings.

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: arXiv

Danchev, Peter; Javan, Arash; Hasanzadeh, Omid; Moussavi, Ahmad
Rings with $u-1$ Quasinilpotent for Each Unit u. arXiv:2402.15455
Preprint, arXiv:2402.15455 [math.RA] (2024).

Summary: We define and explore in-depth the notion of *UQ rings* by showing their important properties and by comparing their behavior with that of the well-known classes of UU rings and JU rings, respectively. Specifically, among the other established results, we prove that UQ rings are always Dedekind finite (often named directly finite) as well as that, for semipotent rings R, the following equivalence hold: $R/J(R)$ is UQ $\iff$ R is UQ having the property that the set $QN(R)$ of quasinilpotent elements of R coincides with the Jacobson radical $J(R)$ of R.

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: DOI arXiv

Danchev, Peter; **Hasanzadeh, Omid**; **Javan, Arash**; **Moussavi, Ahmad**
Rings Whose Invertible Elements Are Weakly Nil-Clean. arXiv:2401.11461
Preprint, arXiv:2401.11461 [math.RA] (2024).

Summary: We study those rings in which all invertible elements are weakly nil-clean calling them *UWNC rings*. This somewhat extends results due to Karimi-Mansoub et al. in Contemp. Math. (2018), where rings in which all invertible elements are nil-clean were considered abbreviating them as *UNC rings*. Specifically, our main achievements are that the triangular matrix ring $\mathrm{T}_n(R)$ over a ring R is UWNC precisely when R is UNC. Besides, the notions UWNC and UNC do coincide when $2 \in J(R)$. We also describe UWNC 2-primal rings R by proving that R is a ring with $J(R) = \mathrm{Nil}(R)$ such that $U(R) = \pm 1 + \mathrm{Nil}(R)$. In particular, the polynomial ring $R[x]$ over some arbitrary variable x is UWNC exactly when R is UWNC. Some other relevant assertions are proved in the present direction as well.

Full Text: arXiv

Danchev, Peter; **Hasanzadeh, Omid**; **Moussavi, Ahmad**
Rings Whose Clean Elements Are Uniquely Strongly Clean. arXiv:2401.03449
Preprint, arXiv:2401.03449 [math.RA] (2024).

Summary: We define the class of *CUSC* rings, that are those rings whose clean elements are uniquely strongly clean. These rings are a common generalization of the so-called *USC* rings, introduced by Chen-Wang-Zhou in J. Pure & Applied Algebra (2009), which are rings whose elements are uniquely strongly clean. These rings also generalize the so-called *CUC* rings, defined by Calugareanu-Zhou in Mediterranean J. Math. (2023), which are rings whose clean elements are uniquely clean. We establish that a ring is USC if, and only if, it is simultaneously CUSC and potent. Some other interesting relationships with CUC rings are obtained as well.

Full Text: arXiv

Danchev, Peter; **Hasanzadeh, Omid**; **Moussavi, Ahmad**
Rings Whose Non-Invertible Elements Are Uniquely Strongly Clean. arXiv:2401.03320
Preprint, arXiv:2401.03320 [math.RA] (2024).

Summary: We define and explore in details the class of GUSC rings, that are those rings whose non-invertible elements are uniquely strongly clean. These rings are a common generalization of the so-called USC rings, introduced by Chen-Wang-Zhou in J. Pure Appl. Algebra (2009), which are rings whose elements are uniquely strongly clean. These rings also generalize the so-called GUC rings, defined by Guo-Jiang in Bull. Transilvania Univ. Braşov (2023), which are rings whose non-invertible elements are uniquely clean.

Full Text: arXiv

Danchev, Peter; **Javan, Arash**; **Moussavi, Ahmad**
Rings Whose Clean and Nil-Clean Elements Have Some Clean-Like Properties.
arXiv:2401.02189
Preprint, arXiv:2401.02189 [math.RA] (2024).

Summary: We define two types of rings, namely the so-called CSNC and NCUC that are those rings whose clean elements are strongly nil-clean, respectively, whose nil-clean elements are uniquely clean. Our results obtained in this paper somewhat expand these obtained by Calugareanu-Zhou in Mediterr. J. Math. (2023) and by Cui-Danchev-Jin in Publ. Math. Debrecen (2024), respectively.

Full Text: arXiv

Mohammadi, Rasul; Moussavi, Ahmad; Zahiri, Masoome
Some abelian McCoy rings. (English) Zbl 1533.16038
J. Korean Math. Soc. 60, No. 6, 1233-1254 (2023).

The authors of paper under review introduce two proper subclasses of abelian McCoy rings, calling them as *π-CN rings* and *π-duo rings*, respectively, and systematically studied certain of their fundamental characteristic properties accomplished with relationships among some other classical kins of rings such as 2-primal rings, bounded rings, etc.

In fact, it is proved that a ring R is π-CN whenever every nilpotent element of index 2 in R is central. These rings are a natural generalization of the well-known class of CN-rings, defined by *M. P. Drazin* in [“Rings with central idempotent or nilpotent elements”, Proc. Edinburgh Math. Soc. (2) 9, 157–165 (1958)]. (not as indicated in reference [9] from the article under review, since in [Proc. Am. Math. Soc. 27, 427–433 (1971; Zbl 0219.13023)] was, actually, published a different paper written by *D. E. Fields*).

It is also established the important fact that π-CN rings are abelian, McCoy and 2-primal. The authors showed that π-duo rings are too strongly McCoy and abelian, as well as that they are strongly right AB-rings.

If, however, the ring R is π-duo, then the polynomial ring $R[x]$ has the property that any of the finitely generated ideals consisting entirely of zero divisors possesses a non-zero annihilator. If, in addition, R is π-duo and it is either right weakly continuous, or every prime ideal of R is maximal, then R has the same property. Moreover, a π-duo ring R is left perfect if, and only if, R contains no infinite set of orthogonal idempotents and every left R-module has a maximal submodule.

The achieved results substantially improve on many existing in the literature corresponding results. The paper is interesting and, definitely, will be of some interest for the ring-theoretic community.

Reviewer: Peter Danchev (Sofia)

MSC:

16S34	Group rings
16U99	Conditions on elements
16E50	von Neumann regular rings and generalizations (associative algebraic aspects)
16W10	Rings with involution; Lie, Jordan and other nonassociative structures
13B99	Commutative ring extensions and related topics

Keywords:

CN-rings; π-CN-rings; 2-primal rings; McCoy rings; duo-rings; π-duo rings; strongly AB-rings; property (A); nil radical

Full Text: DOI
References:

[1] F. Azarpanah, O. A. S. Karamzadeh, and R. A. Aliabad, On ideals consisting entirely of zero divisors, Comm. Algebra 28 (2000), no. 2, 1061-1073. https://doi.org/10.1080/ 00927870008826878 · Zbl 0970.13002 · doi:10.1080/00927870008826878

[2] H. Bass, Finitistic dimension and a homological generalization of semi-primary rings, Trans. Amer. Math. Soc. 95 (1960), 466-488. https://doi.org/10.2307/1993568 · Zbl 0094.02201 · doi:10.2307/1993568

[3] G. F. Birkenmeier, H. E. Heatherly, and E. K. S. Lee, Completely prime ideals and associated radicals, in Ring theory (Granville, OH, 1992), 102-129, World Sci. Publ., River Edge, NJ, 1993. · Zbl 0853.16022

[4] V. Camillo, C. Y. Hong, N. K. Kim, Y. Lee, and P. P. Nielsen, Nilpotent ideals in polynomial and power series rings,

Proc. Amer. Math. Soc. 138 (2010), no. 5, 1607-1619. https://doi.org/10.1090/S0002-9939-10-10252-4 · Zbl 1209.16014 · doi:10.1090/S0002-9939-10-10252-4

[5] V. Camillo and P. P. Nielsen, McCoy rings and zero-divisors, J. Pure Appl. Algebra 212 (2008), no. 3, 599-615. https://doi.org/10.1016/j.jpaa.2007.0 · Zbl 1162.16021 · doi:10.1016/j.jpaa.2007.06.010

[6] F. Cedó, Zip rings and Mal'cev domains, Comm. Algebra 19 (1991), no. 7, 1983-1991. https://doi.org/10.1080/00927879108824242 · Zbl 0733.16007 · doi:10.1080/00927879108824242

[7] J. Chen, X. Yang, and Y. Zhou, On strongly clean matrix and triangular ma-trix rings, Comm. Algebra 34 (2006), no. 10, 3659-3674. https://doi.org/10.1080/ 00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791

[8] R. C. Courter, Finite-dimensional right duo algebras are duo, Proc. Amer. Math. Soc. 84 (1982), no. 2, 157-161. https://doi.org/10.2307/2043655 · Zbl 0495.16013 · doi:10.2307/2043655

[9] M. P. Drazin, Rings with central idempotent or nilpotent elements, Proc. Amer. Math. Soc. 27 (1971), no. 3, 427-433. · Zbl 0219.13023

[10] C. Faith, Annihilator ideals, associated primes and Kasch-McCoy commutative rings, Comm. Algebra 19 (1991), no. 7, 1867-1892. https://doi.org/10.1080/ 00927879108824235 · Zbl 0729.16015 · doi:10.1080/00927879108824235

[11] E. H. Feller, Properties of primary noncommutative rings, Trans. Amer. Math. Soc. 89 (1958), 79-91. https://doi.org/10.2307/1993133 · Zbl 0095.25703 · doi:10.2307/1993133

[12] D. E. Fields, Zero divisors and nilpotent elements in power series rings, Proc. Amer. Math. Soc. 27 (1971), 427-433. https://doi.org/10.2307/2036469 · Zbl 0219.13023 · doi:10.2307/2036469

[13] M. Habibi, A. Moussavi, and A. Alhevaz, The McCoy condition on Ore extensions, Comm. Algebra 41 (2013), no. 1, 124-141. https://doi.org/10.1080/00927872.2011. · Zbl 1269.16019 · doi:10.1080/00927872.2011.623289

[14] E. Hashemi, Extensions of zip rings, Studia Sci. Math. Hungar. 47 (2010), no. 4, 522-528. https://doi.org/10.1556/SScMath.2009.1148 · Zbl 1221.16019 · doi:10.1556/SScMath.2009.1148

[15] M. Henriksen and M. Jerison, The space of minimal prime ideals of a commutative ring, Trans. Amer. Math. Soc. 115 (1965), 110-130. https://doi.org/10.2307/1994260 · Zbl 0147.29105 · doi:10.2307/1994260

[16] Y. Hirano, On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra 168 (2002), no. 1, 45-52. https://doi.org/10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[17] Y. Hirano, D. V. Huynh, and J. K. Park, On rings whose prime radical contains all nilpotent elements of index two, Arch. Math. (Basel) 66 (1996), no. 5, 360-365. https: //doi.org/10.1007/BF01781553 · Zbl 0862.16011 · doi:10.1007/BF01781553

[18] C. Y. Hong, N. K. Kim, T. K. Kwak, and Y. Lee, Extensions of zip rings, J. Pure Appl. Algebra 195 (2005), no. 3, 231-242. https://doi.org/10.1016/j.jpaa.2004.08.025 · Zbl 1071.16020 · doi:10.1016/j.jpaa.2004.08.025

[19] C. Y. Hong, N. K. Kim, Y. Lee, and S. J. Ryu, Rings with Property (A) and their exten-sions, J. Algebra 315 (2007), no. 2, 612-628. https://doi.org/10.1016/j.jalgebra. 2007.01.042 · Zbl 1156.16001 · doi:10.1016/j.jalgebra.2007.01.042

[20] C. Huh, Y. Lee, and A. Smoktunowicz, Armendariz rings and semicommutative rings, Comm. Algebra 30 (2002), no. 2, 751-761. https://doi.org/10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[21] S. U. Hwang, N. K. Kim, and Y. Lee, On rings whose right annihilators are bounded, Glasg. Math. J. 51 (2009), no. 3, 539-559. https://doi.org/10.1017/ S0017089509005163 · Zbl 1198.16001 · doi:10.1017/S0017089509005163

[22] J. Krempa, Some examples of reduced rings, Algebra Colloq. 3 (1996), no. 4, 289-300. · Zbl 0859.16019

[23] T. Y. Lam, A First Course in Noncommutative Rings, second edition, Graduate Texts in Mathematics, 131, Springer, New York, 2001. https://doi.org/10.1007/978-1-4419-8616-0 · Zbl 0980.16001 · doi:10.1007/978-1-4419-8616-0

[24] Z. Lei, J. Chen, and Z. Ying, A question on McCoy rings, Bull. Austral. Math. Soc. 76 (2007), no. 1, 137-141. https://doi.org/10.1017/S000497270003 · Zbl 1127.16027 · doi:10.1017/S0004972700039526

[25] T. G. Lucas, Two annihilator conditions: property (A) and (A.C.), Comm. Algebra 14 (1986), no. 3, 557-580. https://doi.org/10.1080/0092787860882 · Zbl 0586.13004 · doi:10.1080/00927878608823325

[26] G. Marks, Duo rings and Ore extensions, J. Algebra 280 (2004), no. 2, 463-471. https: //doi.org/10.1016/j.jalgebra.2004.04.018 · Zbl 1072.16023 · doi:10.1016/j.jalgebra.2004.04.018

[27] N. H. McCoy, Remarks on divisors of zero, Amer. Math. Monthly 49 (1942), 286-295. https://doi.org/10.2307/2303094 · Zbl 0060.07703 · doi:10.2307/2303094

[28] P. P. Nielsen, Semi-commutativity and the McCoy condition, J. Algebra 298 (2006), no. 1, 134-141. https://doi.org/10.1016/j.jalgebra.2005.10.008 · Zbl 1110.16036 · doi:10.1016/j.jalgebra.2005.10.008

[29] W. M. Xue, On weakly left duo rings, Riv. Mat. Univ. Parma (4) 15 (1989), 211-217. · Zbl 0763.16001

[30] H.-P. Yu, On quasi-duo rings, Glasgow Math. J. 37 (1995), no. 1, 21-31. https://doi. org/10.1017/S0017089500030342 · Zbl 0819.16001 · doi:10.1017/S0017089500030342

[31] M. Zahiri, A. Moussavi, and R. Mohammadi, On rings with annihilator condition, Studia Sci. Math. Hungar. 54 (2017), no. 1, 82-96. https://doi.org/10.1556/012.2017.54.1. 1355 · Zbl 1399.16008 · doi:10.1556/012.2017.54.1.1355

[32] M. Zahiri, A. Moussavi, and R. Mohammadi, On annihilator ideals in skew polynomial rings, Bull. Iranian Math. Soc. 43 (2017), no. 5, 1017-1036. · Zbl 1403.16025

[33] J. M. Zelmanowitz, The finite intersection property on annihilator right ideals, Proc. Amer. Math. Soc. 57 (1976), no. 2, 213-216. https://doi.org/10.2307/2041191 .Box:14115-134, Tehran, Iran Email address: mohamadi.rasul@yahoo.com · Zbl 0333.16014 · doi:10.2307/2041191

Ahmadi, M.; **Moussavi, A.**
Generalized Baer $\ast$-rings. (English) Zbl 07690995
Sib. Math. J. 64, No. 3, 767-786 (2023).

Summary: We say that a $\ast$-ring R is a generalized Baer $\ast$-ring if, for each nonempty subset S of R, the right annihilator $r_R(S^n)$ is generated as a right ideal by a projection for some positive integer n depending on S. Each nonempty set of projections in a generalized Baer $\ast$-ring is a complete lattice. We study the properties of the $\ast$-rings. We show that abelian generalized Baer $\ast$-rings are well behaved with respect to finite direct products and certain triangular matrix extensions. We give some algebraic examples that are generalized Baer $\ast$-rings but not Baer $\ast$-rings. We obtain the classes of both finite and infinite dimensional Banach $\ast$-algebras which are generalized Baer $\ast$-rings but not Baer $\ast$-rings. We define a generalized AW^*-algebra as a C^*-algebra that is a generalized Baer $\ast$-ring. The concept of generalized AW^*-algebra is a generalization of AW^*-algebra, an algebraic extension of a W^*-algebra. We show that for semicommutative C^*-algebras the notions of generalized AW^*-algebra and AW^*-algebra coincide.

MSC:

16W10 Rings with involution; Lie, Jordan and other nonassociative structures
16D25 Ideals in associative algebras
46L05 General theory of C^*-algebras

Keywords:

generalized AW^*-algebra; generalized Baer $\ast$-ring; Baer $\ast$-ring; Banach $\ast$-algebra; C^*-algebra

Full Text: DOI

References:

[1] Rickart, C., Banach algebras with an adjoint operation, Ann. of Math., 47, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[2] Berberian, S., Baer \(\ast \)-Rings (1972), Berlin: Springer, Berlin · Zbl 0242.16008 · doi:10.1007/978-3-642-15071-5

[3] Kaplansky, I., Rings of Operators (1965), Chicago: Univ. Chicago, Chicago

[4] Sherman, S., The second adjoint of a \(C^* \)-algebra, Proc. Internat. Congr. Math. Cambridge, 1, 470 (1950)

[5] Takeda, Z., Conjugate spaces of operator algebras, Proc. Japan Acad., 30, 90-95 (1954) · Zbl 0057.09705

[6] Birkenmeier, G.; Park, J., Self-adjoint ideals in Baer \(\ast \)-rings, Comm. Algebra, 28, 9, 4259-4268 (2000) · Zbl 0982.16024 · doi:10.1080/00927870008827088

[7] Ahmadi, M.; Golestani, N.; Moussavi, M., Generalized quasi-Baer \(\ast \)-rings and Banach \(\ast \)-algebras, Comm. Algebra, 48, 5, 2207-2247 (2020) · Zbl 1439.16039 · doi:10.1080/00927872.2019.1710841

[8] Cui, J.; Wang, Z., A note on strongly \(\ast \)-clean rings, J. Korean Math. Soc., 52, 4, 839-851 (2015) · Zbl 1327.16030 · doi:10.4134/JKMS.2015.52.4.839

[9] Ahmadi, M.; Moussavi, A., Generalized Rickart \(* \)-rings, Sib. Math. J., 62, 6, 963-980 (2021) · Zbl 1485.16037 · doi:10.1134/S003744662106001X

[10] Paykan, K.; Moussavi, A., A generalization of Baer rings, Int. J. Pure Appl. Math., 99, 3, 257-275 (2015)

[11] Birkenmeier, G.; Park, J.; Tariq Rizvi, S., Hulls of semiprime rings with applications to \(C^* \)-algebras, J. Algebra, 322, 2, 327-352 (2009) · Zbl 1195.16005 · doi:10.1016/j.jalgebra.2009.03.036

[12] Lam, T., A First Course in Noncommutative Rings (2000), New York: Springer, New York

[13] Ahmadi, M.; Moussavi, A., Rings whose singular ideals are nil, Comm. Algebra, 48, 11, 4796-4808 (2020) · Zbl 1462.16018 · doi:10.1080/00927872.2020.1771351

[14] Handelman, D., Prüfer domains and Baer \(\ast \)-rings, Arch. Math. (Basel), 29, 3, 241-251 (1977) · Zbl 0374.13014 · doi:10.1007/BF01220401

[15] Huh, C.; Kim, H.; Lee, Y., P.P. rings and generalized p.p. rings, J. Pure Appl. Algebra, 167, 1, 37-52 (2002) · Zbl 0994.16003 · doi:10.1016/S0022-4049(01)00149-9

[16] Small, L., Semihereditary rings, Bull. Amer. Math. Soc., 73, 656-658 (1967) · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3

[17] Lam, T., Lectures on Modules and Rings (1999), New York: Springer, New York · Zbl 0911.16001 · doi:10.1007/978-1-4612-0525-8

[18] Ôhori, M., On non-commutative generalized p.p. rings, Math. J. Okayama Univ., 26, 1, 157-167 (1984) · Zbl 0577.16003

[19] Ôhori, M., Some studies on generalized p.p. rings and hereditary rings, Math. J. Okayama Univ., 27, 53-70 (1985) · Zbl 0594.16016

[20] Pierce, R., Modules over commutative regular rings, Mem. Amer. Math. Soc., 70, 1-112 (1967) · Zbl 0152.02601

[21] Tyukavkin, D., An analogue of Pierce sheaves for rings with involution, Russian Math. Surveys, 38, 5, 164-165 (1983) · Zbl 0543.16006 · doi:10.1070/RM1983v038n05ABEH003520

[22] Kaplansky, I., Topological representation of algebras. II, Trans. Amer. Math. Soc., 68, 1, 62-75 (1950) · Zbl 0035.30301 · doi:10.1090/S0002-9947-1950-0032612-4

[23] Azumaya, G., Strongly \(\pi \)-regular rings, J. Fac. Sci. Hokkaido Univ., 13, 34-39 (1954) · Zbl 0058.02503

[24] Murphy, G., \(C^{\ast} \)-Algebras and Operator Theory (1990), Cambridge: Academic, Cambridge · Zbl 0714.46041

[25] Dixmier, J., \(C^* \)-Algebras (1977), Amsterdam: North-Holland, Amsterdam · Zbl 0372.46058

[26] Blackadar, B., Operator Algebras: Theory of \(C^* \)-Algebras and von Neumann Algebras (2006), Berlin: Springer, Berlin · Zbl 1092.46003 · doi:10.1007/3-540-28517-2

Moradiani, S.; Moussavi, A.

A characterization of extending trivial Morita contexts. (English) Zbl 1533.16007

J. Algebra Appl. 22, No. 5, Article ID 2350114, 10 p. (2023).

Summary: A right module M is extending if every submodule is essential in a direct summand of M. In this paper, necessary and sufficient conditions are obtained for a trivial Morita context ring to be right extending.

MSC:

16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

16D40 Free, projective, and flat modules and ideals in associative algebras

Cited in **1** Document

Keywords:

right extending rings; Morita context

Full Text: DOI

References:

[1] Akalan, E., Birkenmeier, G. F. and Tercan, A., Characterizations of extending modules and \(\mathcal{G} \)-extending generalized triangular matrix rings, Comm. Algebra40 (2012) 1069-1085. · Zbl 1248.16005

[2] Alkan, M. and Harmanci, A., On summand sum and summand intersection property of modules, Turk J. Math.26 (2002) 131-147. · Zbl 1011.16001

[3] Amitsur, S. A., Rings of quotients and Morita contexts, J. Algebra17 (1971) 273-298. · Zbl 0221.16014

[4] Birkenmeier, G. F., Heatherly, H. E., Kim, J. Y. and Park, J. K., Triangular matrix representations, J. Algebra230 (2000) 558-595. · Zbl 0964.16031

[5] Birkenmeier, G. F., Park, J. K. and Rizvi, S. T., Generalized triangular matrix rings and the fully invariant extending property, Rocky Mountain J. Math.32(4) (2002) 1299-1319. · Zbl 1035.16024

[6] Blecher, D. P. and Le Merdy, C., Operator Algebras and Their Modules (Oxford University Press, Oxford, 2004). · Zbl 1061.47002

[7] Chatters, A. W. and Khuri, S. M., Endomorphism rings of modules over nonsingular CS-rings, J. London Math. Soc.21(3) (1980) 434-444. · Zbl 0432.16017

[8] Dung, N. V., Huynh, D. V., Smith, P. F. and Wisbauer, R., Extending Modules, , Vol. 313 (Longman, Harlow/New York, 1994). · Zbl 0841.16001

[9] Goodearl, K. R., Ring Theory (Marcel Dekker, New York, 1976). · Zbl 0336.16001

[10] Goodearl, K. R., Singular torsion and the splitting properties, Amer. Math. Soc. Mem.124 (1972). · Zbl 0242.16018

[11] Goodearl, K. R., Ring Theory: Non-Singular Rings and Modules (Marcel Dekker, New York, 1976). · Zbl 0336.16001

[12] Haghany, A., Hopficity and co-hopficity for Morita contexts, Comm. Algebra27 (1999) 477-492. · Zbl 0921.16002

[13] Haghany, A. and Varadarajan, K., Study of formal triangular matrix rings, Comm. Algebra27 (1999) 5507-5525. · Zbl

0941.16005

[14] Haghany, A. and Varadarajan, K., Study of modules over formal triangular matrix rings, J. Pure Appl. Algebra147(1) (2000) 41-58. · Zbl 0951.16009

[15] Harada, M., On modules with extending properties, Osaka J. Math.19 (1982) 203-215. · Zbl 0491.16026

[16] Herstein, I. N., A counterexample in Noetherian rings, Proc. Nat. Acad. Sci. USA54 (1965) 1036-1037. · Zbl 0138.26802

[17] Krylov, P. A., Isomorphism of generalized matrix rings, Algebra Logic47(4) (2008) 258-262. · Zbl 1155.16302

[18] Krylov, P. A. and Tuganbaev, A. A., Modules over formal matrix rings, J. Math. Sci.171(2) (2010) 248-295. · Zbl 1283.16025

[19] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, 1990).

[20] Lam, T. Y., Lectures on Modules and Rings, , Vol. 189 (Springer, New York, 1999). · Zbl 0911.16001

[21] Loustaunau, P. and Shapiro, J., Morita Contexts: Noncommutative Ring Theory, , Vol. 1448 (Springer, Berlin, 1990), pp. 80-92. · Zbl 0711.16006

[22] Marianne, M., Rings of quotients of generalized matrix rings, Comm. Algebra15 (1987) 1991-2015. · Zbl 0629.16013

[23] McConnell, J. C. and Robson, J. C., Noncommutative Noetherian Rings, , Vol. 30 (American Mathematical Society, Providence, Rhode Island, 1987). · Zbl 0644.16008

[24] Mohamed, S. H. and Müller, B. J., Continuous and Discrete Modules, , Vol. 147 (Cambridge University Press, Cambridge, 1990). · Zbl 0701.16001

[25] Mohammadi, R., Moussavi, A. and Zahiri, M., A characterization of extending generalized triangular matrix rings, J. Algebra Appl. (2019). · Zbl 1509.16026

[26] Morita, K., Duality for modules and its applications to the theory of rings with minimum condition, Sci. Rep. Tokyo Kyoiku Diagaku Sect. A6 (1958) 83-142. · Zbl 0080.25702

[27] Müller, M., Rings of quotients of generalised matrix rings, Comm. Algebra15 (1987) 1991-2015. · Zbl 0629.16013

[28] Rizvi, S. T. and Roman, C. S., Baer and quasi-Baer modules, Comm. Algebra32(1) (2004) 103-123. · Zbl 1072.16007

[29] Sands, A. D., Radicals and Morita contexts, J. Algebra24 (1973) 335-345. · Zbl 0253.16007

[30] Santa-Clara, C., Extending modules with injective or semisimple summands, J. Pure Appl. Alg.127 (1998) 193-203. · Zbl 0934.16003

[31] Tang, G., Li, C. and Zhou, Y., Study of Morita contexts, Comm. Algebra42(4) (2014) 1668-1681. · Zbl 1292.16020

[32] Tercan, A., On certain CS-rings, Comm. Algebra23(2) (1995) 405-419. · Zbl 0820.16001

[33] Utumi, Y., On continuous regular rings, Canad. Math. Bull.4 (1961) 63-69. · Zbl 0178.36503

[34] K. Varadarajan, Formal triangular matrix rings and modules over them: A survey, Math. Student 2007, Special Centenary Volume (2008) 81-99. · Zbl 1185.16032

Farshad, N.; **Safari Sabet, Sh. A.**; **Moussavi, A.**
Amalgamation rings and the fully invariant extending property. (English) Zbl 1519.16002
Commun. Algebra 51, No. 4, 1565-1574 (2023).

A ring is right FI-extending if every ideal is right essential in an idempotent generated right ideal, and quasi-Baer if the right annihilator of every ideal is generated as a right ideal by an idempotent.

In this paper, the authors characterise the amalgamation of rings A and B along an ideal K of B with respect to a ring isomorphism of A onto B which is either FI-extending or quasi-Baer. Their results generalise the FI-extending properties of other classical constructions, for example triangular matrix rings.

Reviewer: Phillip Schultz (Perth)

MSC:

16D50 Injective modules, self-injective associative rings
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16D20 Bimodules in associative algebras

Keywords:

amalgamation ring; FI-extending; fully invariant; generalized triangular matrix ring; quasi-Baer; semi-

central

Full Text: DOI

References:

[1] Anh, P. N.; Birkenmeier, G. F.; Van Wyk, L., Idempotents and structures of rings, Linear Multilinear Algebra, 64, 2002-2029 (2016) · Zbl 1376.16023

[2] Anh, P. N.; Birkenmeier, G. F.; Van Wyk, L., Peirce decompositions, idempotents and rings, J. Algebra, 564, 247-275 (2020) · Zbl 1468.16041

[3] Birkenmeier, G. F.; Călugăreanu, G.; Fuchs, L.; Goeters, H. P., The fully invariant-extending property for abelian groups, Commun. Algebra, 29, 673-685 (2001) · Zbl 0992.20039 · doi:10.1081/AGB-100001532

[4] Birkenmeier, G. F.; Müller, B. J.; Rizvi, S. T., Modules in which every fully invariant submodule is essential in a direct summand, Commun. Algebra, 30, 1395-1415 (2002) · Zbl 1006.16010 · doi:10.1080/00927870209342387

[5] Birkenmeier, G. F.; Park, J. K.; Rizvi, S. T., Generalized triangular matrix rings and the fully invariant extending property, J. Math, 32, 4, 1299-1319 (2002) · Zbl 1035.16024

[6] Birkenmeier, G. F.; Park, J. K.; Rizvi, S. T., Modules with fully invariant submodules essential in fully invariant summands, Commun. Algebra, 30, 1833-1852 (2002) · Zbl 1005.16005

[7] Boisen, M. B.; Sheldon, P. B., CPI-extension: Over rings of integral domains with special prime spectrum, Canad. J. Math, 29, 722-737 (1977) · Zbl 0363.13002 · doi:10.4153/CJM-1977-076-6

[8] Chatters, A. W.; Khuri, S. M., Endomorphism rings of modules over nonsingular CS rings, J. London Math. Soc, 21, 434-444 (1980) · Zbl 0432.16017 · doi:10.1112/jlms/s2-21.3.434

[9] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J., 34, 417-424 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[10] D' Anna, M., A construction of Gorenstein rings, J. Algebra, 306, 2, 507-519 (2006) · Zbl 1120.13022

[11] D' Anna, M.; Finocchiaro, C. A.; Fontana, M.; Fontana, M.; Kabbaj, S.-E.; Olberding, B.; Swanson, I., Commutative Algebra and its Applications, Amalgamated algebras along an ideal, 241-252 (2009), Berlin: Walter de Gruyter, Berlin

[12] D' Anna, M.; Finocchiaro, C. A.; Fontana, M., Properties of chains of prime ideals in amalgamated algebras along an ideal, J. Pure Appl. Algebra, 214, 1633-1641 (2010) · Zbl 1191.13006 · doi:10.1016/j.jpaa.2009.12.008

[13] D' Anna, M.; Fontana, M., The amalgamated duplication of a ring along a multiplicative-canonical ideal, Ark. Mat, 45, 2, 241-252 (2007) · Zbl 1143.13002

[14] D' Anna, M.; Fontana, M., An amalgamated duplication of a ring along an ideal: The basic properties, J. Algebra Appl., 6, 3, 443-459 (2007) · Zbl 1126.13002 · doi:10.1142/S0219498807002326

[15] Goodearl, K. R.; Warfield, R. B. Jr., An Introduction to Noncommutative Noetherian Rings (2004), Cambridge: Cambridge University Press, Cambridge · Zbl 1101.16001

[16] Mohammadi, R.; Moussavi, A.; Zahiri, M., A characterization of extending generalized triangular matrix rings, J. Algebra Appl., 20, 2, 2150016 (2021) · Zbl 1509.16026 · doi:10.1142/S021949882150016X

[17] Nagata, M., Local Rings (1962), New York: Interscience, New York · Zbl 0123.03402

[18] Pollingher, A.; Zaks, A., On Baer and quasi-Baer rings, Duke Math. J., 37, 127-138 (1970) · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X

Barati, Ruhollah; **Moussavi, Ahmad**

A note on weakly nil-clean rings. (English) Zbl 1505.16051

Mediterr. J. Math. 20, No. 2, Paper No. 79, 11 p. (2023).

Summary: A ring R is (strongly) weakly nil clean if every element in R is the sum or difference of a nilpotent and an idempotent (that commutes). In this note, we show that if R is strongly nil clean such that $J(R)$ is locally nilpotent, then $M_n(R)$ is weakly nil clean. We also give a characterization of strongly weakly nil cleanness of the group ring RG where R is a ring and G is a group, and a characterization of weakly nil cleanness of the group ring RG, when R is a ring and G is a nilpotent group. If A and B are two strongly weakly nil-clean k-algebras (k is a commutative ring) such that $J(A)$ and $J(B)$ are locally nilpotent, then $A \otimes_k B$ is a strongly weakly nil-clean k-algebra. This gives an answer to the question posed in [*A. Stancu*, J. Algebra Appl. 15, No. 10, Article ID 1620001, 4 p. (2016; Zbl 1358.16033)].

MSC:

16U99 Conditions on elements
16S34 Group rings
15A99 Basic linear algebra

Cited in **1** Document

Keywords:

strongly weakly nil-clean rings; weakly nil-clean ring; strongly nil-clean rings

Full Text: DOI

References:

[1] Anderson, DD; Camillo, V., Armendariz rings and Gaussian rings, Commun. Algebra, 26, 7, 2265-2272 (1998) · Zbl 0915.13001 · doi:10.1080/00927879808826274

[2] Barati, R.; Mousavi, A.; Abyzov, AN, Rings whose elements sums of \(m\)-potents and nilpotents, Commun. Algebra, 50, 10, 4437-4459 (2022) · Zbl 1502.16042 · doi:10.1080/00927872.2022.2063299

[3] Bouzidi, AD; Cherchem, A.; Leroy, A., Exponents of skew polynomials over periodic rings, Commun. Algebra, 49, 4, 1639-1655 (2021) · Zbl 1469.16055 · doi:10.1080/00927872.2020.1842432

[4] Breaz, S.; Călugăreanu, G.; Danchev, P.; Micu, T., Nil-clean matrix rings, Linear Algebra Appl., 439, 10, 3115-3119 (2013) · Zbl 1355.16023 · doi:10.1016/j.laa.2013.08.027

[5] Breaz, S.; Danchev, P.; Zhou, Y., Rings in which every element is either a sum or a difference of a nilpotent and an idempotent, J. Algebra Appl., 15, 8, 1650148 (2016) · Zbl 1354.16040 · doi:10.1142/S0219498816501486

[6] Chen, H.; Sheibani, M., Strongly weakly nil-clean rings, J. Algebra Appl., 16, 12, 1750233 (2017) · Zbl 1392.16037 · doi:10.1142/S0219498817502334

[7] Clement, AE; Majewicz, S.; Zyman, M., The Theory of Nilpotent Groups (2017), Berlin: Springer, Berlin · Zbl 1402.20002 · doi:10.1007/978-3-319-66213-8

[8] Connell, IG, On the group ring, Can. J. Math., 15, 650-685 (1963) · Zbl 0121.03502 · doi:10.4153/CJM-1963-067-0

[9] Danchev, P.; McGovern, W., Commutative weakly nil clean unital rings, J. Algebra, 425, 410-422 (2015) · Zbl 1316.16028 · doi:10.1016/j.jalgebra.2014.12.003

[10] Diesl, AJ, Nil clean rings, J. Algebra, 383, 197-211 (2013) · Zbl 1296.16016 · doi:10.1016/j.jalgebra.2013.02.020

[11] Kanwar, P.; Leroy, A.; Matczuk, J., Clean elements in polynomial rings, Contemp. Math., 634, 197-204 (2015) · Zbl 1326.16035 · doi:10.1090/conm/634/12699

[12] Koşan, MT; Wang, Z.; Zhou, Y., Nil clean and strongly nil clean rings, J. Pure Appl. Algebra, 220, 2, 633-646 (2016) · Zbl 1335.16026 · doi:10.1016/j.jpaa.2015.07.009

[13] Koşan, MT; Zhou, Y., On weakly nil-clean rings, Front. Math. China, 11, 4, 949-955 (2016) · Zbl 1352.16022 · doi:10.1007/s11464-016-0555-6

[14] Lam, TY, A First Course in Noncommutative Rings (2013), New York: Springer, New York

[15] Lee, TK; Zhou, Y., Armendariz and reduced rings, Commun. Algebra, 32, 6, 2287-2299 (2004) · Zbl 1068.16037 · doi:10.1081/AGB-120037221

[16] Marks, G., On 2-primal Ore extensions, Commun. Algebra, 29, 5, 2113-2123 (2001) · Zbl 1005.16027 · doi:10.1081/AGB-100002173

[17] Nasr-Isfahani, AR, Radicals of skew polynomial and skew Laurent polynomial rings over skew Armendariz rings, Commun. Algebra, 42, 3, 1337-1349 (2014) · Zbl 1302.16022 · doi:10.1080/00927872.2012.738746

[18] Nicholson, WK, Lifting idempotents and exchange rings, Trans. Am. Math. Soc., 229, 269-278 (1977) · Zbl 0352.16006 · doi:10.1090/S0002-9947-1977-0439876-2

[19] Passman, DS, Nil ideals in group rings, Mich. Math. J., 9, 4, 375-384 (1962) · Zbl 0113.02903 · doi:10.1307/mmj/1028998773

[20] Sahinkaya, S.; Tang, G.; Zhou, Y., Nil-clean group rings, J. Algebra Appl., 16, 7, 1750135 (2017) · Zbl 1382.16021 · doi:10.1142/S0219498817501353

[21] Stancu, A., A note on commutative weakly nil clean rings, J. Algebra Appl., 15, 10, 1620001 (2016) · Zbl 1358.16033 · doi:10.1142/S0219498816200012

[22] Tuganbaev, A., Rings whose nonzero modules have maximal submodules, J. Math. Sci., 109, 3, 1589-1640 (2002) · Zbl 1012.16006 · doi:10.1023/A:1013981125581

[23] Wang, W., Maximal semicommutative subrings of upper triangular matrix rings, Commun. Algebra, 36, 1, 77-81 (2008) · Zbl 1143.16030 · doi:10.1080/00927870701649374

[24] Wei-xing, C.; Shu-ying, C., On weakly semicommutative rings, Commun. Math. Res, 27, 2, 179-192 (2011) · Zbl 1249.16041

Mehralinejadian, Somaye; **Moussavi, Ahmad**; **Sahebi, Shervin**
Weakly Baer rings. (English) Zbl 1507.16024
J. Algebr. Syst. 10, No. 2, 361-374 (2023).

Summary: We say a ring R with unity is left weakly Baer if the left annihilator of any nonempty subset of R is right s-unital by right semicentral idempotents, which implies that R modulo the left annihilator of any nonempty subset is flat. It is shown that, unlike the Baer or right PP conditions, the weakly Baer property is inherited by polynomial extensions. Examples are provided to explain the results.

MSC:

16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16U40 Idempotent elements (associative rings and algebras)
16D25 Ideals in associative algebras

Keywords:

left weakly Baer ring; weakly p.q.-Baer ring; APP ring; S-unital left (resp. right) ideal

Full Text: DOI

References:

[1] 1. D. D. Anderson and V. Camillo, Armendariz rings and Gaussian rings, Comm. Algebra, 26(7) (1998), 2265-2272. 2. E. P. Armendariz, A note on extensions of Baer and p.p.-rings, J. Austral. Math. Soc., 18 (1974), 470-473. 3. H. E. Bell, Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc., 2 (1970), 363-368. 4. G. F. Birkenmeier, Idempotents and completely semiprime ideals, Comm. Algebera, 11 (1983), 567-580. 5. G. F. Birkenmeier, J. Y. Kim and J. K. Park, A sheaf representation of quasi-Baer rings, J. Pure. Appl. Algebra, 146 (2000), 209-223. 6. G. F. Birkenmeier, J. Y. Kim and J. K. Park, On quasi-Baer rings, Contemp. Math., 259 (2000), 67-92. 7. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Principally quasi-Baer rings, Comm. Algebra, 29(2) (2001), 639-660. 8. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Quasi-Baer ring extensions and biregular rings, Bull. Aust. Math. Soc., 61 (2000), 39-52. 9. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Semicentral reduced algebras, in International Symp. Ring Theory, eds. G. F. Birkenmeier, J. K. Park and Y. S. Park, Birkhauser, Boston, 2001. 10. G. F. Birkenmeier and J. K. Park, Triangular matrix representations of ring extensions, J. Algebra, 265(2) (2003), 457-477. 11. G. F. Birkenmeier, J. K. Park and S. T. Rizvi, Extensions of Rings and Modules, Birkh¨auser, New York, 2013. 12. S. A. Chase, Generalization of triangular matrices, Nagoya Math. J., 18 (1961), 13-25. 13. W. E. Clark, Twisted matrix units semigroup algebras, Duke Math. J., 34 (1967), 417-423. 14. S. Endo, Note on P.P. rings, Nagoya Math. J., 17 (1960), 167-170. 15. K. R. Goodearl, Von Neumann Regular Rings, Krieger, Malabar, 1991. 16. Y. Hirano, On annihilator ideals of a polynomail ring over noncommutative ring, J. Pure Appl. Algebra, 168(1) (2002), 45-52. 17. I. Kaplansky, Rings of Operators, Benjamin, New York, 1965. 18. Y. Lee, N. K. Kim and C. Y. Hong, Counterexamples on baer rings, Comm. Algebra, 25(2) (1997), 497-507. 19. Z. Liu and R. Zhao, A generalization of PP-rings and p.q.-Baer rings, Glasgow Math. J., 48(2) (2006), 217-229. 20. A. Majidinya, A. Moussavi, Weakly principally quasi-Baer rings, J. Algebra Appl., 15(1) (2016), Article ID: 1650002 . 21. A. Majidinya, A. Moussavi and K. Paykan, Generalized APP-rings, Comm. Algebra, 41(12) (2013), 4722-4750. 22. A. C. Mewborn, Regular rings and Baer rings, Math. Z., 121 (1971), 211-219. 23. A. R. Nasr-Isfahani, A. Moussavi, On ore extensions of quasi-Baer rings, J. Algebra Appl., 7(2) (2008), 211-224. 24. A. Pollingher and A. Zaks, On Baer and quasi-Baer rings, Duke Math. J., 37 (1970), 127-138. 25. C. E. Rickart, Banach algebras with an adjoint operation, Ann. of Math., 47(2) (1946), 528-550. 26. S. T. Rizvi and C. S. Roman, Baer and quasi Baer modules, Comm. Algebra, 32(1) (2004), 103-123. 27. L. W. Small, Semihereditary rings, Bull. Amer. Math. Soc., 73 (1967), 656-658. 28. B. Stenstrom, Rings of Quotients, Springer-Verlag, Berlin, Heidelberg, 1975. 29. H. Tominaga, On s-unital rings, Math. J. Okayama Univ., 18 (1976), 117-134.

Danchev, Peter; **Javan, Arash**; **Moussavi, Ahmad**
On Some Extensions of π-Regular Rings. arXiv:2312.06257
Preprint, arXiv:2312.06257 [math.RA] (2023).

Summary: Some variations of π-regular and nil clean rings were recently introduced in [**?**, **?**, **?**], respectively. In this paper, we examine the structure and relationships between these classes of rings. Specifically, we prove that (m, n)-regularly nil clean rings are left-right symmetric and also show that the inclusions (D-regularly nil clean) $\subseteq$ (regularly nil clean) $\subseteq$ ((m, n)-regularly nil clean) hold, as well as we answer Questions 1, 2 and 3 posed in [**?**]. Moreover, some other analogous questions concerning the symmetric properties of certain classes of rings are treated as well by proving that centrally Utumi rings are always strongly π-regular.

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: arXiv

Danchev, Peter; Javan, Arash; Moussavi, Ahmad
Rings With $u^n - 1$ Nilpotent For Each Unit u. arXiv:2311.15018
Preprint, arXiv:2311.15018 [math.RA] (2023).

Summary: We continue the study in-depth of the so-called n-UU rings for any $n \geq 1$, that were defined by the first-named author in Toyama Math. J. (2017) as those rings R for which $u^n - 1$ is always a nilpotent for every unit $u \in R$. Specifically, for any $n \geq 2$, we prove that a ring is strongly n-nil-clean if, and only if, it is simultaneously strongly π-regular and an $(n-1)$-UU ring. This somewhat extends results due to Diesl in J. Algebra (2013), Abyzov in Sib. Math. J. (2019) and Cui-Danchev in J. Algebra Appl. (2020). Moreover, our results somewhat improves the ones obtained by Koan et al. in Hacettepe J. Math. Stat. (2020).

MSC:

16S34 Group rings
16U60 Units, groups of units (associative rings and algebras)

Full Text: arXiv

Aramideh, Nasibeh; Moussavi, Ahmad
Polynomial extensions of cP-Baer rings. arXiv:2310.17958
Preprint, arXiv:2310.17958 [math.RA] (2023).

Summary: Birkenmeier and Heider, in [2], say that a ring R is right cP-Baer if the right annihilator of a cyclic projective right R-module in R is generated by an idempotent. These rings are a generalization of the right p.q.-Baer and abelian rings. Generally, a formal power series ring over one indeterminate, wherein its base ring is right p.q.-Baer, is not necessarily right p.q.-Baer. However, according to [2], if the base ring is right cP-Baer then the power series ring over one indeterminate is right cP-Baer. Following [2], we investigate the transfer of the cP-Baer property between a ring R and various extensions (including skew polynomials, skew Laurent polynomials, skew power series, skew inverse Laurent series, and monoid rings). We also answer a question posed by Birkenmeier and Heider [2] and provide examples to illustrate the results.

Full Text: arXiv

Dodongeh, E.; Moussavi, A.; Nikandish, R.
Strong resolving graph of the intersection graph in commutative rings. arXiv:2309.13284
Preprint, arXiv:2309.13284 [math.CO] (2023).

Summary: The intersection graph of ideals associated with a commutative unitary ring R is the graph $G(R)$ whose vertices all non-trivial ideals of R and there exists an edge between distinct vertices if and only if the intersection of them is non-zero. In this paper, the structure of the resolving graph of $G(R)$ is characterized and as an application, we evaluate the strong metric dimension of $G(R)$.

Full Text: arXiv

Dodongeh, E.; Moussavi, A.; Nikandish, R.
Metric and strong metric dimension in inclusion ideal graphs of commutative rings.
arXiv:2308.09696
Preprint, arXiv:2308.09696 [math.CO] (2023).

Summary: The inclusion ideal graph of a commutative unitary ring R is the (undirected) graph $In(R)$ whose vertices all non-trivial ideals of R and two distinct vertices are adjacent if and only if one of them is a proper subset of the other one. In this paper, the metric dimension of $In(R)$ is discussed. Moreover, the structure of the resolving graph of $In(R)$ is characterized and as an application, we compute the strong metric dimension of $In(R)$.

Full Text: arXiv

Farshad, Negin; Safarisabet, Shaaban Ali; Moussavi, Ahmad
Amalgamated rings with clean-type properties. (English) Zbl 1499.16067
Hacet. J. Math. Stat. 50, No. 5, 1358-1370 (2021).

Summary: Let $f : A \to B$ be a ring homomorphism and K be an ideal of B. Many variations of the notions of clean and nil-clean rings have been studied by a variety of authors. We investigate strongly π-regular and clean-like properties of the amalgamation ring $A \bowtie^f K$ of A with B along K with respect to f.

MSC:

16S99 Associative rings and algebras arising under various constructions
16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16U40 Idempotent elements (associative rings and algebras)

Keywords:

amalgamation ring; nil-clean ring; J-clean ring; semiclean ring; semiregular ring; exchange ring

Full Text: DOI

References:

1 D.D. Anderson, D. Bennis, B. Fahid and A. Shaiea, On n-trivial extension of rings, Rocky Mountain J. Math. 47, 2439-2511, 2017. · Zbl 1390.13025

2 R. Antoine, Examples of Armendariz rings, Comm. Algebra, 38 (11), 4130-4143, 2010. · Zbl 1218.16013

3 C. Bakkari and M. Es-Saidi, Nil-clean property in amalgamated algebras along an ideal, Ann. Univ. Ferrara, 65, 15-20, 2019. · Zbl 1441.13036

4 M.B. Boisen and P.B. Sheldon, CPI-extension: Over rings of integral domains with special prime spectrum, Canad. J. Math. 29, 722-737, 1977. · Zbl 0363.13002

5 G. Călugăreanu, UU rings, Carpathian J. Math. 31 (2), 157-163, 2015. · Zbl 1349.16059

6 H. Chen, On strongly J-clean rings, Comm. Algebra, 38 (10), 3790-3804, 2010. · Zbl 1242.16026

7 M. Chhiti, N. Mahdou and M. Tamekkante, Clean property in amalgamated algebras along an ideal, Hacet. J. Math. Stat. 44 (1), 41-49, 2015. · Zbl 1320.13020

8 Y. Chun, Y.C. Jeon, S. Kang, K.N. Lee and Y. Lee, A concept unifying the Armendariz and NI conditions, Bull. Korean Math. Soc. 48 (1), 115-127, 2011. · Zbl 1214.16021

9 P. Crawley and B. Jónsson, Refinements for infinite direct decompositions of algebraic systems, Pacific J. Math. 14, 797-855, 1964. · Zbl 0134.25504

10 P. Danchev and T.Y. Lam, Rings with unipotent units, Publ. Math. Debrecen, 88 (3-4), 449-466, 2016. · Zbl 1374.16089

11 M. D'Anna, A construction of Gorenstein rings, J. Algebra, 306 (2), 507-519, 2006. · Zbl 1120.13022

12 M. D'Anna and M. Fontana, The amalgamated duplication of a ring along a multiplicative-canonical ideal, Ark. Mat. 45 (2), 241-252, 2007. · Zbl 1143.13002

13 M. D'Anna and M. Fontana, An amalgamated duplication of a ring along an ideal: the basic properties, J. Algebra Appl. 6 (3), 443-459, 2007. · Zbl 1126.13002

14 M. D'Anna, C. A. Finocchiaro and M. Fontana, Amalgamated algebras along an ideal, Commutative algebra and its applications, Walter de Gruyter, Berlin, 241-252, 2009.

15 A.J. Diesl, Nil clean rings, J. Algebra, 383, 197-211, 2013. · Zbl 1296.16016

16 M.F. Dischinger, Sur les anneaux fortement π-reguliers, C. R. Acad. Sc. Paris, 283, 571-573, 1976. · Zbl 0338.16001

17 C.Y. Honga, N. Kimb and Y. Lee, Exchange rings and their extensions, J. Pure Appl. Algebra, 179, 117-126, 2003. · Zbl 1023.16012

18 T.Y. Lam, A first course in noncommutative rings, Berlin-Heidelberg-New York: Springer-Verlag, 1991. · Zbl 0728.16001

19 M. Nagata, Local Rings, Interscience, New York, 1962. · Zbl 0123.03402

20 W.K. Nicholson, Semiregular modules and rings, Canad. J. Math. XXVIII, 1105-1120, 1976. · Zbl 0317.16005

21 W.K. Nicholson, Lifting idempotents and exchange rings, Trans. Amer. Math. Soc. 229, 269-278, 1977. · Zbl 0352.16006

22 W.K. Nicholson, Strongly clean rings and Fitting's lemma, Comm. Algebra, 27 (8), 3583-3592, 1999. · Zbl 0946.16007

23 W.K. Nicholson and Y. Zhou, Rings in which elements are uniquely the sum of an idempotent and a unit. Glasgow Math. J. 46, 227-236, 2004. · Zbl 1057.16007

24 S. Sahinkaya, G. Tang and Y. Zhou, Nil-clean group rings, J. Algebra Appl. 16 (5), 1750135, 2017. · Zbl 1382.16021

25 J. Stock, On rings whose projective modules have the exchange property, J. Algebra, 103, 437-453, 1986. · Zbl 0603.16016

26 A. Tuganbaev, Rings close to regular, Moscow Power Engineering Institute, Technological University, Moscow, Russia 2002. · Zbl 1120.16012

27 R.B. Warfield Jr., Exchange rings and decompositions of modules, Math. Ann. 199, 31-36, 1972. · Zbl 0228.16012

28 Y. Ye, Semiclean rings, Comm. Algebra, 31 (11), 5609-5625, 2003. · Zbl 1043.16015

Ahmadi, M.; Moussavi, A.
Generalized Rickart $*$-rings. (English. Russian original) Zbl 1485.16037
Sib. Math. J. 62, No. 6, 963-980 (2021); translation from Sib. Mat. Zh. 62, No. 2, 1191-1214 (2021).

A ring R with an involution $*$ is a generalized Rickart $*$-ring if for every $x \in R$ there is a positive integer n such that the right annihilator of x^n is generated by a projection.

The authors study various properties of generalized Rickart $*$-rings and their relations with generalized Baer $*$-rings and other related rings (for example, generalized Baer and generalized Rickart rings). They present various examples and non-examples of generalized Rickart $*$-rings (for example, generalized Rickart $*$-rings which are neither Rickart $*$-rings nor generalized Baer $*$-rings).

Reviewer: Lia Vas (Philadelphia)

MSC:

16W10 Rings with involution; Lie, Jordan and other nonassociative structures
16W99 Associative rings and algebras with additional structure
16S99 Associative rings and algebras arising under various constructions

Cited in **1** Document

Keywords:

Rickart $*$-ring; generalized Rickart $*$-ring; generalized p.p. ring; generalized Baer $*$-ring; Banach $*$-algebra

Full Text: DOI

References:

[1] Rickart, CE, Banach algebras with an adjoint operation, Ann. Math., 47, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[2] Berberian, SK, Baer \(\ast \)-Rings (1972), Berlin: Springer, Berlin · Zbl 0242.16008 · doi:10.1007/978-3-642-15071-5

[3] Kaplansky, I., Rings of Operators (1965), New York: Benjamin, New York · Zbl 0174.18503

[4] Sherman S., "The second adjoint of a \(C^* \)-algebra," in: Proceedings of the International Congress of Mathematicians:

Cambridge, Massachusetts, U.S.A., August 30-September 6, 1950. Vol. 1, Providence, Amer. Math. Soc. (1952), 470.

[5] Takeda, Z., Conjugate spaces of operator algebras, Proc. Japan Acad., 30, 2, 90-95 (1954) · Zbl 0057.09705

[6] Birkenmeier, GF; Park, JK, Self-adjoint ideals in Baer \(\ast \)-rings, Comm. Algebra, 28, 9, 4259-4268 (2000) · Zbl 0982.16024 · doi:10.1080/00927870008827088

[7] Birkenmeier, GF; Park, JK; Rizvi, ST, Ring hulls and their applications, J. Algebra, 304, 2, 633-665 (2006) · Zbl 1161.16002 · doi:10.1016/j.jalgebra.2006.06.034

[8] Ahmadi, M.; Golestani, N.; Moussavi, M., Generalized quasi-Baer \(\ast \)-rings and Banach \(\ast \)-algebras, Comm. Algebra, 48, 5, 2207-2247 (2020) · Zbl 1439.16039 · doi:10.1080/00927872.2019.1710841

[9] Ahmadi M. and Moussavi M., "Generalized Baer \(\ast \)-rings," Abh. Math. Semin. Univ. Hambg. (in press). · Zbl 1439.16039

[10] Ôhori, M., On non-commutative generalized p.p. rings, Math. J. Okayama Univ., 26, 1, 157-167 (1984) · Zbl 0577.16003

[11] Huh, C.; Kim, HK; Lee, Y., p.p. rings and generalized p.p. rings, J. Pure Appl. Algebra, 167, 37-52 (2002) · Zbl 0994.16003 · doi:10.1016/S0022-4049(01)00149-9

[12] Ôhori, M., Some studies on generalized p.p. rings and hereditary rings, Math. J. Okayama Univ., 27, 157-167 (1985) · Zbl 0577.16003

[13] Cui, J.; Yin, X., On \(\pi \)-regular rings with involution, Algebra Colloq., 25, 3, 509-518 (2018) · Zbl 1397.16009 · doi:10.1142/S1005386718000342

[14] Kaplansky, I., Topological representation of algebras. II, Trans. Amer. Math. Soc., 68, 1, 62-75 (1950) · Zbl 0035.30301 · doi:10.1090/S0002-9947-1950-0032612-4

[15] Azumaya, G., Strongly \(\pi \)-regular rings, J. Fac. Sci. Hokkaido Univ., 13, 34-39 (1954) · Zbl 0058.02503

[16] Ungor, B.; Halcoglu, S.; Harmanci, A., A generalization of Rickart modules, Bull. Belg. Math. Soc. Simon Stevin, 21, 2, 303-318 (2014) · Zbl 1305.16001 · doi:10.36045/bbms/1400592627

[17] Lam, TY, A First Course in Noncommutative Rings (2000), New York: Springer, New York

[18] Milies, CP; Sehgal, SK, An Introduction to Group Rings (2002), Dordrecht: Springer Science \& Business Media, Dordrecht · Zbl 0997.20003 · doi:10.1007/978-94-010-0405-3

[19] Cedó, F.; Rowen, LH, Addendum to 'Examples of semiperfect rings', Israel J. Math., 107, 343-348 (1998) · Zbl 0915.16014 · doi:10.1007/BF02764018

[20] Birkenmeier, GF; Kim, JY; Park, JK, Principally quasi-Baer rings, Comm. Algebra, 29, 2, 639-660 (2001) · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[21] Von Neumann, J., Continuous Geometry (1960), Princeton: Princeton Univ., Princeton · Zbl 0171.28003

[22] Lee, Y.; Kim, NK; Hong, Y., Counterexamples on Baer rings, Comm. Algebra, 25, 2, 479-507 (1997) · Zbl 0874.16009 · doi:10.1080/00927879708825869

[23] Shin, G., Prime ideal and sheaf representation of a pseudo symmetric rings, Trans. Amer. Math. Soc., 184, 43-60 (1973) · Zbl 0283.16021 · doi:10.1090/S0002-9947-1973-0338058-9

[24] Vaš, L., \(\ast \)-Clean rings; some clean and almost clean Baer \(\ast \)-rings and von Neumann algebras, J. Algebra, 324, 12, 3388-3400 (2010) · Zbl 1246.16031 · doi:10.1016/j.jalgebra.2010.10.011

[25] Birkenmeier, GF; Groenewald, NJ; Heatherly, HE, Minimal and maximal ideals in rings with involution, Beiträge Algebra Geom., 38, 2, 217-225 (1997) · Zbl 0884.16021

[26] Lam, TY, Lectures on Modules and Rings (1999), New York: Springer, New York · Zbl 0911.16001 · doi:10.1007/978-1-4612-0525-8

[27] Martindale, WS, On semiprime P.I. rings, Proc. Amer. Math. Soc., 40, 365-369 (1973) · Zbl 0268.16009 · doi:10.1090/S0002-9939-1973-0318215-3

[28] Fisher, JW, Structure of semiprime P.I. rings, Proc. Amer. Math. Soc., 39, 465-467 (1973) · Zbl 0265.16006 · doi:10.1090/S0002-9939-1973-0320049-0

[29] Birkenmeier, GF; Park, JK; Rizvi, ST, Extensions of Rings and Modules (2013), New York: Springer, New York · Zbl 1291.16001 · doi:10.1007/978-0-387-92716-9

[30] Jacobson, N., Structure of Rings (1964), Providence: Amer. Math. Soc., Providence

[31] Handelman, D., Prüfer domains and Baer \(\ast \)-rings, Arch. Math. (Basel), 29, 241-251 (1977) · Zbl 0374.13014 · doi:10.1007/BF01220401

[32] Pierce, RS, Modules over commutative regular rings, Mem. Amer. Math. Soc., 70, 1-112 (1967) · Zbl 0152.02601

[33] Tyukavkin, DV, An analogue of Pierce sheaves for rings with involution, Russian Math. Surveys, 38, 5, 164-165 (1983) · Zbl 0543.16006 · doi:10.1070/RM1983v038n05ABEH003520

[34] Cui, J.; Wang, Z., A note on strongly \(\ast \)-clean rings, J. Korean Math. Soc., 52, 4, 839-851 (2015) · Zbl 1327.16030 · doi:10.4134/JKMS.2015.52.4.839

[35] Takesaki, M., Operator Algebras. I (2001), Berlin: Springer, Berlin · Zbl 0436.46043

[36] Grove, K.; Pedersen, GK, Sub-Stonean spaces and corona sets, J. Funct. Anal., 56, 124-143 (1984) · Zbl 0539.54029 · doi:10.1016/0022-1236(84)90028-4

[37] Gillman, L.; Jerison, M., Rings of Continuous Functions (1960), New York: Springer, New York · Zbl 0093.30001 · doi:10.1007/978-1-4615-7819-2

[38] Dixmier, J., \(C^* \)-Algebras (1977), Amsterdam: North-Holland, Amsterdam · Zbl 0372.46058

[39] Blackadar, B., Operator Algebras: Theory of \(C^* \)-Algebras and von Neumann Algebras (2006), Berlin: Springer, Berlin · Zbl 1092.46003 · doi:10.1007/3-540-28517-2

Shahidikia, Ali; **Javadi, Hamid Haj Seyyed**; **Moussavi, Ahmad**
π-Baer $*$-rings. (English) Zbl 1505.16053
Int. Electron. J. Algebra 30, 231-242 (2021).

Throughout the paper under review, R denotes an associative ring with unity. Let us recall that a $*$-ring (or, in other words, an involutive ring) R is the one with a formal operation $* : R \to R$, called involution, such that $(x+y)^* = x^* + y^*$, $(xy)^* = y^*x^*$ and $(x^*)^* = x$ for all $x, y \in R$. The authors investigate the so-called π-Baer $*$-rings and, more concretely, they establish interrelationships between π-Baer $*$-rings and some related classes of rings such as π-Baer rings, Baer $*$-rings and quasi-Baer $*$-rings, respectively. Moreover, they also announce several results on π-Baer $*$-rings. Finally, they show that the defined concept is well behaved with respect to polynomial extensions and full matrix rings. Certain examples are also provided to explain and delimit the obtained results – see the text for more details.

The work is rather technical and conditional.

Reviewer: Peter Danchev (Sofia)

MSC:

16U99 Conditions on elements

Cited in **1** Document

Keywords:

π-Baer ring; π-Baer $*$-ring; quasi-Baer $*$-ring; Baer ring; Baer $*$-ring

Full Text: DOI

References:

[1] M. Ahmadi, N. Golestani and A. Moussavi, Generalized quasi-Baer * -rings and Banach * -algebras, Comm. Algebra, 48(5) (2020), 2207-2247. · Zbl 1439.16039

[2] E. P. Armendariz, A note on extensions of Baer and p.p. rings, J. Austral. Math. Soc., 18 (1974), 470-473. · Zbl 0292.16009

[3] H. E. Bell, Near-rings in which each element is a power of itself, Bull. Austral. Math. Soc., 2 (1973), 363-368. · Zbl 0191.02902

[4] S. K. Berberian, Baer * -Rings, Grundlehren Math. Wiss., Vol. 195, Springer-Verlag, New York-Berlin, 1972. · Zbl 0242.16008

[5] G. F. Birkenmeier N. J. Groenewald and H. E. Heatherly, Minimal and max-imal ideals in rings with involution, Beiträge Algebra Geom., 38(2) (1997), 217-225. · Zbl 0884.16021

[6] G. F. Birkenmeier, Y. Kara and A. Tercan, π-Baer rings, J. Algebra Appl., 17(2) (2018), 1850029 (19 pp). · Zbl 1416.16019

[7] G. F. Birkenmeier, J. Y. Kim and J. K. Park, Quasi-Baer ring extensions and biregular rings, Bull. Austral. Math. Soc., 61(1) (2000), 39-52. · Zbl 0952.16009

[8] G. F. Birkenmeier, J. Y. Kim and J. K. Park, Polynomial extensions of Baer and quasi-Baer rings, J. Pure Appl. Algebra, 159(1) (2001), 25-42. · Zbl 0987.16018

[9] G. F. Birkenmeier, B. J. Müller and S. T. Rizvi, Modules in which every fully invariant submodule is essential in a direct summand, Comm. Algebra, 30(3) (2002), 1395-1415. · Zbl 1006.16010

[10] G. F. Birkenmeier and J. K. Park, Self-adjoint ideals in Baer * -rings, Comm. Algebra, 28(9) (2000), 4259-4268. · Zbl 0982.16024

[11] G. F. Birkenmeier and J. K. Park, Triangular matrix representations of ring extensions, J. Algebra, 265(2) (2003), 457-477. · Zbl 1054.16018

[12] G. F. Birkenmeier, J. K. Park and S. T. Rizvi, Hulls of semiprime rings with applications to C * -algebras, J. Algebra, 322(2) (2009), 327-352. · Zbl 1195.16005

[13] G. F. Birkenmeier, J. K. Park and S. T. Rizvi, Extensions of Rings and Mod-ules, Birkhäuser/Springer, New York, 2013. · Zbl 1291.16001

[14] K. A. Brown, The singular ideals of group rings, Quart. J. Math. Oxford Ser. (2), 28(109) (1977), 41-60. · Zbl 0345.16012

[15] W. E. Clark, Twisted matrix units semigroup algebras, Duke Math. J., 34 (1967), 417-423. · Zbl 0204.04502

[16] ALI SHAHIDIKIA, HAMID HAJ SEYYED JAVADI AND AHMAD MOUSSAVI

[17] D. E. Handelman, Prüfer domains and Baer * -rings, Arch. Math. (Basel), 29(3) (1977), 241-251. · Zbl 0374.13014

[18] I. Kaplansky, Rings of Operators, W. A. Benjamin, Inc., New York-Amsterdam, 1968. · Zbl 0212.39101

[19] T. Y. Lam, Lectures on Modules and Rings, Graduate Texts in Mathematics, 189, Springer-Verlag, New York, 1999. · Zbl 0911.16001

[20] W. Narkiewicz, Polynomial Mappings, Lecture Notes in Mathematics, 1600, Springer-Verlag, Berlin, 1995. · Zbl 0829.11002

Mehralinejadian, S.; **Moussavi, A.**; **Sahebi, Sh.**

Skew inverse Laurent series extensions of weakly principally quasi Baer rings. (English)

Zbl 1498.16031

J. Algebra Appl. 20, No. 10, Article ID 2150191, 18 p. (2021).

The authors investigate the properties of the inverse skew Laurent series ring $R((x^{-1};\sigma,\delta))$ and the skew inverse power series ring $R[[x^{-1};\sigma,\delta]]$ over two generalizations of Baer rings, namely the weakly principally quasi-Baer rings [*A. Majidinya* and *A. Moussavi*, J. Algebra Appl. 15, No. 1, Article ID 1650002, 20 p. (2016; Zbl 1343.16001)] and the AIP rings [*A. Majidinya* et al., Algebra Colloq. 22, 947–968 (2015; Zbl 1345.16007)]. Here R is always an associative ring with identity. Amongst the main results, one will find conditions under which the ring R is a weakly principally quasi-Baer ring (respt. a right AIP ring) if and only if the Laurent series ring $R((x^{-1};\sigma,\delta))$ is a weakly principally quasi-Baer ring (respt. a right AIP ring). Moreover, a lattice isomorphism from the right annihilators of ideals of R to the right annihilators of ideals of $R((x^{-1};\sigma,\delta))$ and, respectively, of $R[[x^{-1};\sigma,\delta]]$ is given.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Keywords:

skew inverse Laurent series ring; skew inverse power series ring; weakly p.q.-Baer ring; APP ring; AIP ring; s-unital ideal

Full Text: DOI

References:

[1] Berberian, S. K., Baer ∗-Rings (Springer-Verlag, Berlin-Heidelberg-New York, 1972). · Zbl 0242.16008

[2] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., On quasi-Baer rings, Contemp. Math.259 (2000) 67-92. · Zbl 0974.16006

[3] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., On polynomial extensions of principally quasi-Baer rings, Kyungpook Math. J.40 (2000) 247-253. · Zbl 0987.16017

[4] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., Principally quasi-Baer rings, Comm. Algebra29(2) (2001) 639-660. · Zbl 0991.16005

[5] Birkenmeier, G. F., Kim, J. Y. and Park, J. K., Polynomial extensions of Baer and quasi-Baer rings, J. Pure Appl. Algebra159(1) (2001) 25-42. · Zbl 0987.16018

[6] Birkenmeier, G. F. and Park, J. K., Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. · Zbl 1054.16018

[7] Chase, S. U., A generalization the ring of triangular matrices, Nagoya Math. J.18 (1961) 13-25. · Zbl 0113.02901

[8] Cheng, Y. and Huang, F. K., A note on extensions of principally quasi-Baer rings, Taiwanese J. Math.12(7) (2008) 1721-1731. · Zbl 1169.16015

[9] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-423. · Zbl 0204.04502

[10] Goodearl, K. R., Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math.13(4) (1983) 573-618. · Zbl 0532.16002

[11] Habibi, M., On inverse skew Laurent series extensions of weakly rigid rings, Comm. Algebra45(1) (2017) 151-161. · Zbl 1368.16045

[12] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[13] Hirano, Y., On ordered monoid rings over a quasi-Baer rings, Comm. Algebra29 (2001) 2089-2095. · Zbl 0996.16020

[14] Hirano, Y., On annihilator ideals of a polynomial ring over noncommutative ring, J. Pure Appl. Algebra168(1) (2002) 45-52. · Zbl 1007.16020

[15] Hong, C. Y., Kim, N. K. and Kwak, T. K., Ore extensions of Baer and P.P.-ring, J. Pure Appl. Algebra151 (2000) 215-226. · Zbl 0982.16021

[16] Hong, C. Y., Kim, N. K. and Lee, Y., Ore extensions of quasi-Baer rings, Comm. Algebra37 (2009) 2030-2039. · Zbl 1177.16016

[17] Kaplansky, I., Projections in Banach algebras, Ann. of Math.53(2) (1951) 235-249. · Zbl 0042.12402

[18] Kaplansky, I., Rings of Operators (Benjamin, New York, 1968). · Zbl 0174.18503

[19] Krempa, J., Some examples of reduced rings, Algebra Colloq.3 (1996) 289-300. · Zbl 0859.16019

[20] Lam, T. Y., Lectures on Modules and Rings, , Vol. 189 (Springer, New York, 1999). · Zbl 0911.16001

[21] Letzter, E. S. and Wang, L., Noetherian skew inverse power series rings, Algebr. Represent. Theory13 (2010) 303-314. · Zbl 1217.16038

[22] Liu, Z., A note on principally quasi-Baer rings, Comm. Algebra30(8) (2002) 3885-3890. · Zbl 1018.16023

[23] Liu, Z. and Zhao, R., A generalization of PP-rings and p.q.-Baer rings, Glasg. Math. J.48(2) (2006) 217-229. · Zbl 1110.16003

[24] Majidinya, A. and Moussavi, A., Weakly principally quasi-Baer rings, J. Algebra Appl.15(1) (2016) 20. · Zbl 1343.16001

[25] Majidinya, A., Moussavi, A. and Paykan, K., Rings in which the annihilator of an ideal is pure, Algebra Colloq.22(1) (2015) 947-968. · Zbl 1345.16007

[26] Manaviyat, R., Moussavi, A. and Habibi, M., On skew inverse Laurent serieswise Armendariz rings, Comm. Algebra40(1) (2012) 138-156. · Zbl 1261.16045

[27] Manaviyat, R., Moussavi, A. and Habibi, M., Principally quasi-Baer skew power series modules, Comm. Algebra41(4) (2013) 1278-1291. · Zbl 1272.16041

[28] Nasr-Isfahani, A. R. and Moussavi, A., On weakly rigid rings, Glasg. Math. J.51(3) (2009) 425-440. · Zbl 1184.16026

[29] Paykan, K., Skew inverse power series rings over a ring with projective socle, Czechoslovak Math. J.67(2) (2017) 389-395. · Zbl 1458.16050

[30] Paykan, K. and Moussavi, A., Special properties of differential inverse power series rings, J. Algebra Appl.15(9) (2016) 1650181. · Zbl 1375.16019

[31] Paykan, K. and Moussavi, A., Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Comm. Algebra45(6) (2017) 2306-2324. · Zbl 1395.16048

[32] Paykan, K. and Moussavi, A., Study of skew inverse Laurent series rings, J. Algebra Appl.16(11) (2017) 1750221. · Zbl 1392.16041

[33] Paykan, K. and Moussavi, A., Differential extensions of weakly principally quasi-Baer rings, Acta Math. Vietnam.44(4) (2019) 977-991. · Zbl 1466.16019

[34] Pollingher, A. and Zaks, A., On Baer and quasi-Baer rings, Duke Math. J.37 (1970) 127-138. · Zbl 0219.16010

[35] Rickart, C. E., Banach algebras with an adjoint operation, Ann. of Math.47(2) (1946) 528-550. · Zbl 0060.27103

[36] Schur, I., Uber vertauschbare lineare Differentialausdrucke, Sitzungsber, Berl. Math. Ges.4 (1905) 2-8. · Zbl 36.0387.01

[37] Small, L. W., Semihereditary rings, Bull. Am. Math. Soc.73 (1967) 656-658. · Zbl 0149.28102

[38] Stenström, B., Rings of Quotients (Springer-Verlag, 1975). · Zbl 0296.16001

[39] Tominaga, H., On \(s\)-unital rings, Math. J. Okayama Univ.18(2) (1975/1976) 117-134. · Zbl 0335.16020

[40] Tuganbaev, D. A., Rings of skew-Laurent series and rings of principal ideals, Vestnik Moskov. Univ. (Ser. I Mat. Mekh.)5 (2000) 55-57. · Zbl 0991.16036

[41] Tuganbaev, D. A., Uniserial skew-Laurent series rings, Vestnik Moskov. Univ. (Ser. I Mat. Mekh.)1 (2000) 51-55. · Zbl 0985.16033

[42] Tuganbaev, D. A., Laurent series ring and pseudo-differential operator rings, J. Math. Sci.128(3) (2005) 2843-2893. · Zbl 1122.16033

Majidinya, Ali; Moussavi, Ahmad

Weakly principally quasi-Baer skew generalized power series rings. (English) Zbl 1478.16046

Appl. Algebra Eng. Commun. Comput. 32, No. 3, 409-425 (2021).

Summary: Let $(S, \leq)$ be a strictly totally ordered monoid and R an (S,ω)-weakly rigid ring, where $\omega : S \to \operatorname{End}(R)$ is a monoid homomorphism. In this paper, we study the weakly p.q.-Bear property of the skew generalized power series ring $R[[S,\omega]]$. As a consequence, the weakly p.q.-Baer property of the skew power series ring $R[[x;\alpha]]$ and the skew Laurent power series ring $R[[x,x^{-1};\alpha]]$ are determined, where α is a ring endomorphism of R.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S35 Twisted and skew group rings, crossed products
16S36 Ordinary and skew polynomial rings and semigroup rings

Keywords:

skew generalized power series ring; weakly principally quasi-Baer ring; weakly rigid ring; s-unital ideal

Full Text: DOI

References:

[1] Annin, S., Associated primes over skew polynomial rings, Commun. Algebra, 30, 5, 2511-2528 (2002) · Zbl 1010.16025 · doi:10.1081/AGB-120003481

[2] Bessenrodt, C., Brungs, H.H., Törner, G.: Right chain rings, Part 1, Schriftenreihe des Fachbereichs Math., vol. 181, Duisburg Univ. (1990) · Zbl 0539.16026

[3] Birkenmeier, GF, Idempotents and completely semiprime ideals, Commun. Algebra, 11, 6, 567-580 (1983) · Zbl 0505.16004 · doi:10.1080/00927878308822865

[4] Birkenmeier, GF; Kim, JY; Park, JK, Principally quasi-Baer rings, Commun. Algebra, 29, 2, 639-660 (2001) · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[5] Cheng, Y.; Huang, FK, A note on extensions of principally quasi-Baer rings, Taiwan. J. Math., 12, 7, 1721-1731 (2008) · Zbl 1169.16015

[6] Clark, WE, Twisted matrix units semigroup algebras, Duke Math. J., 34, 3, 417-424 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[7] Cohn, PM, Free Rings and Their Relations (1985), London: Academic Press, London · Zbl 0659.16001

[8] Hashemi, E.; Moussavi, A.; Nasr-Isfahani, AR, Skew power series extensions of principally quasi-Baer rings, Stud. Sci. Math. Hungar., 45, 4, 469-481 (2008) · Zbl 1188.16021

[9] Hashemi, E.; Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar., 107, 207-224 (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[10] Hirano, Y., On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra, 168, 1, 45-52 (2002) · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[11] Hong, C. Y., Kim, N. K., Kwak, T. K.: Ore extensions of Baer and p.p.-rings, J. Pure Appl. Algebra, 151(3), 215-226 (2000) · Zbl 0982.16021

[12] Kaplansky, I., Rings of Operators (1968), New York: Benjamin, New York · Zbl 0174.18503

[13] Lam, TY, A First Course in Noncommutative Rings (1991), New York: Springer, New York · Zbl 0728.16001 · doi:10.1007/978-1-4684-0406-7

[14] Lam, TY, Lectures on Modules and Rings. Graduate Texts in Mathematics (1999), New York: Springer, New York · Zbl 0911.16001 · doi:10.1007/978-1-4612-0525-8

[15] Liu, ZK, A note on principally quasi-Baer rings, Commun. Algebra, 30, 8, 3885-3890 (2002) · Zbl 1018.16023 · doi:10.1081/AGB-120005825

[16] Liu, ZK, Baer rings of generalized power series, Glasg. Math. J., 44, 3, 463-469 (2002) · Zbl 1040.16029 · doi:10.1017/S0017089502030112

[17] Liu, ZK, Triangular matrix representations of rings of generalized power series, Acta Math. Sinica (English Series), 22, 989-998 (2006) · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[18] Liu, ZK; Zhao, R., A generalization of PP-rings and p.q.-Baer rings, Glasg. Math. J., 48, 2, 217-229 (2006) · Zbl 1110.16003 · doi:10.1017/S0017089506003016

[19] Majidinya, A.; Moussavi, A., On APP skew generalized power series rings, Stud. Sci. Math. Hungar., 50, 4, 436-453 (2013) · Zbl 1307.16037

[20] Majidinya, A., Moussavi, A.: Weakly principally quasi-Baer rings, J. Algebra Appl., 15(1), doi:10.1142/S021949881650002X(2016) · Zbl 1343.16001

[21] Manaviyat, R.; Moussavi, A.; Habibi, M., Principally quasi-Baer skew power series rings, Comm. Algebra, 38, 6, 2164-2176 (2010) · Zbl 1202.16024 · doi:10.1080/00927870903045173

[22] Marks, G.; Mazurek, R.; Ziembowski, M., A unified approach to various generalizations of Amendariz rings, Bull. Austral. Math. Soc., 81, 361-397 (2010) · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[23] Mazurek, R.; Ziembowski, M., On von Neumann regular rings of skew generalized power series, Commun. Algebra, 36, 5, 1855-1868 (2008) · Zbl 1159.16032 · doi:10.1080/00927870801941150

[24] Nasr-Isfahani, AR; Moussavi, A., On weakly rigid rings, Glasg. Math. J., 51, 3, 425-440 (2009) · Zbl 1184.16026 · doi:10.1017/S0017089509005084

[25] Paykan, K.; Mousavi, A., Differential extensions of weakly principally quasi-baer rings, Acta Math. Vietnamica, 44, 977-991 (2018) · Zbl 1466.16019 · doi:10.1007/s40306-018-0291-y

[26] Ribenboim, P., Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra, 198, 2, 327-338 (1997) · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063

[27] Rickart, CE, Banach algebras with an adjoint operation, Ann. Math., 47, 3, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[28] Tominaga, H., On \(s\)-unital rings, Math. J. Okayama Univ., 18, 2, 117-134 (1976) · Zbl 0335.16020

[29] Tuganbaev, AA, Some Ring and Module Properties of Skew Laurent Series. Formal Power Series and Agebraic combinatorics (Moscow), 613-622 (2000), Berlin: Springer, Berlin · Zbl 0997.16033

[30] Varadarajan, K., Generalized power series modules, Commun. Algebra, 29, 3, 1281-1294 (2001) · Zbl 0988.16035 · doi:10.1081/AGB-100001683

[31] Zhao, R., Left APP-rings of skew generalized power series, J. Algebra Appl., 10, 5, 891-900 (2011) · Zbl 1237.16041 · doi:10.1142/S0219498811005014

[32] Zhao, R.; Liu, ZK, Special properties of modules of generalized power series, Taiwan. J. Math., 12, 2, 447-461 (2008) · Zbl 1146.16309 · doi:10.11650/twjm/1500574166

Mohammadi, Rasul; Moussavi, Ahmad; Zahiri, Masoome
Modules with annihilation property. (English) Zbl 1487.16003
J. Algebra Appl. 20, No. 7, Article ID 2150126, 15 p. (2021).

The main purpose of the paper under review is to investigate the "Property (A)" for right modules over unital associative rings. By definition, a right R-module M has Property (A) if each finitely generated ideal I with $I \subseteq Z(M_R)$ has nonzero annihilator in M_R. For example, in the paper under review, the authors show that over any commutative ring, a right R-module M_R has Property (A) if and only if its injective envelope is $E(M)_R$ has Property (A). In addition to that, they prove that if R is a commutative ring, then every right R-module M_R with finite uniform dimension, has Property (A). As an application of Property (A), they show that if M_R is a symmetric R-module and G a strictly totally ordered monoid, then the right $R[G]$-module $M[G]_{R[G]}$ is primal if and only if the right$R$-module M_R is primal and has Property (A). Recall that a right R-module M_R is said to be primal (introduced by *J. Dauns* [Commun. Algebra 25, No. 8, 2409–2435 (1997; Zbl 0882.16001)]) if $Z(M_R)$ is ideal of R. The concept of Property (A) for rings was introduced by *Y. Quentel* [Bull. Soc. Math. Fr. 99, 265–272 (1971; Zbl 0215.36803)] though calling it "Condition (C)". Apparently, *G. W. Hinkle* and *J. A. Huckaba* used the term "Property (A)" in [J. Reine Angew. Math. 292, 25–36 (1977; Zbl 0348.13011)] for the first time. Later, the Property (A) was investigated in other papers like [*T. G. Lucas*, Commun. Algebra 14, 557–580 (1986; Zbl 0586.13004); *C. Y. Hong* et al., J. Algebra 315, No. 2, 612–628 (2007; Zbl 1156.16001); *P. Nasehpour*, Kyungpook Math. J. 51, No. 1, 37–42 (2011; Zbl 1218.13005)]. Note that by Theorem 82 in [*I. Kaplansky*, Commutative rings. 2nd revised ed. Chicago-London: The University of Chicago Press (1974; Zbl 0296.13001)], any Noetherian commutative ring with identity has Property (A).

Reviewer: Peyman Nasehpour (Golpayegan)

MSC:

16D10	General module theory in associative algebras
16D40	Free, projective, and flat modules and ideals in associative algebras
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Keywords:

rings with property (A); local ring; strictly totally ordered monoid

Full Text: DOI
References:

[1] Anderson, D. D. and Chun, S., McCoy modules and related modules over commutative rings, Comm. Algebra45(6) (2017) 2593-2601. · Zbl 1369.13011

[2] Anderson, F. W. and Fuller, K. R., Rings and Categories of Module (Springer Verlag, 1998).

[3] Buhpang, A. M. and Rege, M. B., Semi-commutative modules and armendariz modules, Arab J. Math. Sci.18 (2002) 53-65. · Zbl 1051.16014

[4] Dauns, J., Primal modules, Comm. Algebra25(8) (1997) 2409-2435. · Zbl 0882.16001

[5] Evans, E. G., Zero divisors in Noetherian-like rings, Trans. Amer. Math. Soc.155(2) (1971) 505-512. · Zbl 0216.32603

[6] Hinkle, G. and Huckaba, J. A., The generalized Kronecker function ring and the ring \(R(X)\), J. Reine Angew. Math.292 (1977) 25-36. · Zbl 0348.13011

[7] Hong, C. Y., Kim, N. K., Lee, Y. and Ryu, S. J., Rings with Property \((A)\) and their extensions, J. Algebra315 (2007) 612-628. · Zbl 1156.16001

[8] Huckaba, J. A., Commutative Rings with Zero Divisors (Marcel Dekker Inc., New York, 1988). · Zbl 0637.13001

[9] Huckaba, J. A. and Keller, J. M., Annihilator of ideals in commutative rings, Pacific J. Math.83 (1979) 375-379. · Zbl 0388.13001

[10] Kaplansky, I., Commutative Rings (Allyn and Bacon, Boston, 1970). · Zbl 0203.34601

[11] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, Inc, 1990).

[12] Lam, T. Y., Lectures on Modules and Rings (Springer-Verlag, New York, Inc., 1998).

[13] Lucas, T. G., Two annihilator conditions: Property (A) and (a.c.), Comm. Algebra14 (1986) 557-580. · Zbl 0586.13004

[14] Mohammadi, R., Moussavi, A. and Zahiri, M., On annihilation of ideals in skew monoid rings, J. Korean. Math. Soc.53(2) (2016) 381-401. · Zbl 1353.16029

[15] Nasehpour, P., Zero-divisors of semigroup modules, Kyungpook Math. J51 (2011) 37-42. · Zbl 1218.13005

[16] Nicholson, W. K. and Yousif, M. F., Quasi-Frobenius Rings (Cambridge University Press, 2003). · Zbl 1042.16009

[17] Quentel, Y., Sur la compacité du spectre minimal d'un anneau, Bull. Soc. Math. France99 (1971) 265-272. · Zbl 0215.36803

[18] Zahiri, M., Moussavi, A. and Mohammadi, R., On rings with annihilator condition, Studia Sci. Math. Hungar.54(1) (2017) 82-96. · Zbl 1399.16008

Mohammadi, Rasul; **Moussavi, Ahmad**; **Zahiri, Masoome**

A characterization of extending generalized triangular matrix rings. (English) Zbl 1509.16026

J. Algebra Appl. 20, No. 2, Article ID 2150016, 14 p. (2021).

All the rings are associative with identity and all modules are unital. Let R and S be rings with unity, M a left R, right S bimodule and let $T=\begin{pmatrix} R & M \\ 0 & S \end{pmatrix}$ be the generalized triangular matrix ring. In this paper, the authors obtain a characterization of the right extending generalized triangular matrix rings. This answers a question which was raised in [*E. Akalan* et al., Commun. Algebra 40, No. 3, 1069–1085 (2012; Zbl 1248.16005)].

The authors prove that: A generalized triangular matrix ring T is right extending if and only if the following conditions are satisfied: (1) M_S is injective; (2) S_S is extending; (3) S_S is essentially M-injective module; (4) For every direct summand X_S of $(M\oplus S)_S$, there exists an idempotent $e=e^2\in R$ such that $(X:_R M)=eR$, and $X\cap M=eM$; (5) $l_R(M)=aR$, where $a\in R$ is a left semicentral idempotent and aR_R is an extending module.

Reviewer: Jebrel M. Habeb (Irbid)

MSC:

16S50 Endomorphism rings; matrix rings

16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

16D50 Injective modules, self-injective associative rings

Cited in **3** Documents

Keywords:
right extending rings; generalized triangular matrix rings; semicentral idempotents

Full Text: DOI

References:

[1] Akalan, E., Birkenmeier, G. F. and Tercan, A., Characterizations of extending modules and \(\mathcal{G} \)-extending generalized triangular matrix rings, Comm. Algebra40 (2012) 1069-1085. · Zbl 1248.16005

[2] Alkan, M. and Harmanci, A., On summand sum and summand intersection property of modules, Turk J. Math.26 (2002) 131-147. · Zbl 1011.16001

[3] Birkenmeier, G. F., Idempotents and completely semiprime ideals, Comm. Algebra11 (1983) 567-580. · Zbl 0505.16004

[4] Birkenmeier, G. F., Heatherly, H. E., Kim, J. Y. and Park, J. K., Triangular matrix representations, J. Algebra230 (2000) 558-595. · Zbl 0964.16031

[5] Birkenmeier, G. F., Park, J. K. and Rizvi, S. T., Generalized triangular matrix rings and the fully invariant extending property, Rocky Mountain J. Math.32(4) (2002) 1299-1319. · Zbl 1035.16024

[6] Blecher, D. P. and Le, C., Merdy, Operator Algebras and Their Modules (Oxford University Press, Oxford, 2004). · Zbl 1061.47002

[7] Chatters, A. W. and Khuri, S. M., Endomorphism rings of modules over nonsingular CS Rings, J. London Math. Soc.21(2) (1980) 434-444. · Zbl 0432.16017

[8] Dung, N. V., Huynh, D. V., Smith, P. F. and Wisbauer, R., Extending Modules, , Vol. 313 (Longman, Harlow/New York, 1994). · Zbl 0841.16001

[9] Harada, M., On modules with extending properties, Osaka J. Math.19 (1982) 203-215. · Zbl 0491.16026

[10] Goodearl, K. R., Singular torsion and the splitting properties, Amer. Math. Soc. Mem.124 (1972). · Zbl 0242.16018

[11] Goodearl, K. R., Ring Theory: Non-Singular Rings and Modules (Marcel Dekker, New York, 1976). · Zbl 0336.16001

[12] Mohamed, S. H. and Müller, B. J., Continuous and Discrete Modules, , Vol. 147 (Cambridge University Press, Cambridge, 1990). · Zbl 0701.16001

[13] Haghany, A. and Varadarajan, K., Study of formal triangular matrix rings, Comm. Algebra27 (1999) 5507-5525. · Zbl 0941.16005

[14] Haghany, A. and Varadarajan, K., Study of modules over a formal triangular matrix rings, J. Pure Appl. Algebra147 (2000) 41-58. · Zbl 0951.16009

[15] Herstein, I. N., A counterexample in Noetherian rings, Proc. Nat. Acad. Sci. U.S.A.54 (1965) 1036-1037. · Zbl 0138.26802

[16] Krylov, P. A., Isomorphism of generalized matrix rings, Algebra Logic47(4) (2008) 258-262. · Zbl 1155.16302

[17] Krylov, P. A. and Tuganbaev, A. A., Modules over formal matrix rings, J. Math. Sciences171(2) (2010) 248-295. · Zbl 1283.16025

[18] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, Inc, 1990).

[19] Lam, T. Y., Lectures on Modules and Rings, , Vol. 189 (Springer Verlag, Berlin-Heidelberg New York, 1999). · Zbl 0911.16001

[20] Müller, M., Rings of quotients of generalised matrix rings, Comm. Algebra15 (1987) 1991-2015. · Zbl 0629.16013

[21] Santa-Clara, C., Extending modules with injective or semisimple summands, J. Pure Appl. Algebra127 (1998) 193-203. · Zbl 0934.16003

[22] Rizvi, S. T. and Roman, C. S., Baer and Quasi-Baer Modules, Comm. Algebra32(1) (2004) 103-123. · Zbl 1072.16007

[23] Tercan, A., On certain CS-rings, Comm. Algebra23(2) (1995) 405-469. · Zbl 0820.16001

[24] Utumi, Y., On continuous regular rings, Canad. Math. Bull.4 (1961) 63-69. · Zbl 0178.36503

Moussavi, Ahmad; **Zahiri, Masoome**; **Mohammadi, Rasul**

Jordan automorphism of Morita context algebras. (English) Zbl 1467.16027

Bull. Malays. Math. Sci. Soc. (2) 44, No. 2, 1079-1092 (2021).

Summary: The aim of this article is to determine entirely the Jordan automorphisms of generalized matrix rings of Morita contexts. Necessary and sufficient conditions are obtained for an $\mathcal{R}$-linear map on a general Morita context to be a Jordan homomorphism. Moreover, some conditions are studied, under which, any Jordan automorphism of a general Morita context is either an automorphism or an anti-automorphism.

MSC:

16S50 Endomorphism rings; matrix rings
16W20 Automorphisms and endomorphisms
16W25 Derivations, actions of Lie algebras

Keywords:

Jordan automorphism; Morita context algebra

Full Text: DOI

References:

[1] Amitsur, SA, Rings of quotients and Morita contexts, J. Algebra, 17, 273-298 (1971) · Zbl 0221.16014 · doi:10.1016/0021-8693(71)90034-2

[2] Aiat-Hadj, AD; Ben Yakoub, L., Jordan automorphisms, Jordan derivations of generalized triangular matrix algebra, Int. J. Math. Math. Sci., 13, 2125-2132 (2005) · Zbl 1079.16017

[3] Aiat-Hadj, AD; Tribak, R., Jordan automorphisms of triangular algebras II, Comment. Math. Univ. Carolin., 56, 3, 265-268 (2015) · Zbl 1349.15068

[4] Brešar, M., Jordan derivations on semiprime rings, Proc. Am. Math. Soc., 104, 4, 1003-1006 (1988) · Zbl 0691.16039 · doi:10.1090/S0002-9939-1988-0929422-1

[5] Benkovič, D.; Eremita, D., Commuting traces and commutativity preserving maps on triangular algebras, J. Algebra, 280, 797-824 (2004) · Zbl 1076.16032 · doi:10.1016/j.jalgebra.2004.06.019

[6] Benkovič, D.; Eremita, D., Multiplicative Lie n-derivations of triangular ringsMultiplicative Lie n-derivations of triangular rings, Linear Algebra Appl., 436, 4223-4240 (2012) · Zbl 1247.16040 · doi:10.1016/j.laa.2012.01.022

[7] Chen, H., Morita contexts with many units, Commun. Algebra, 30, 3, 1499-1512 (2002) · Zbl 1012.16008 · doi:10.1080/00927870209342393

[8] Cheung, W., Lie derivations of triangular algebras, Linear Multilinear Algebra, 51, 3, 299-310 (2003) · Zbl 1060.16033 · doi:10.1080/0308108031000096993

[9] Herstein, IN, Jordan homomorphisms, Trans. Am. Math. Soc., 81, 2, 331-341 (1956) · Zbl 0073.02202 · doi:10.1090/S0002-9947-1956-0076751-6

[10] Haghany, A., Hopficity and co-hopficity for Morita contexts, Commun. Algebra, 27, 477-492 (1999) · Zbl 0921.16002 · doi:10.1080/00927879908826443

[11] Khazal, R.; Dăscălescu, S.; Van Wyk, L., Isomorphism of generalized triangular matrix-rings and recovery of tiles, Int. J. Math. Math. Sci., 9, 533-538 (2003) · Zbl 1022.16019 · doi:10.1155/S0161171203205251

[12] Krylov, PA, Isomorphism of generalized matrix rings, Algebra Log., 47, 4, 258-262 (2008) · Zbl 1155.16302 · doi:10.1007/s10469-008-9016-y

[13] Li, Y-B; Wei, F., Semi-centralizing maps of generalized matrix algebras, Linear Algebra Appl., 436, 5, 1122-1153 (2012) · Zbl 1238.15015 · doi:10.1016/j.laa.2011.07.014

[14] Li, Y-B; Wei, F., Jordan derivations and Lie derivations of path algebras, Bull. Iran. Math. Soc., 44, 79-92 (2018) · Zbl 1410.16043 · doi:10.1007/s41980-018-0006-0

[15] Li, Y-B; Wei, F., Lie derivations of dual extensions of algebras, Colloq. Math., 143, 1, 65-82 (2015) · Zbl 1334.16041 · doi:10.4064/cm141-1-7

[16] Li, Y-B; Wei, F., Jordan derivations of generalized one point extensions, Filomat, 32, 11, 4089-4098 (2018) · Zbl 1499.16121 · doi:10.2298/FIL1811089L

[17] Li, Y-B; Wei, F.; Fosner, A., k-commuting mappings of generalized matrix algebras, Period. Math. Hung., 79, 50-77 (2019) · Zbl 1438.16041 · doi:10.1007/s10998-018-0260-1

[18] Li, Y-B; Wei, F.; Fosner, A., Centralizing traces and Lie-type isomorphisms on generalized matrix algebras, Czechoslov. Math. J., 69, 713-61 (2019) · Zbl 1513.16025 · doi:10.21136/CMJ.2019.0507-17

[19] Li, Y-B; Wyk, LV; Wei, F., Jordan derivations and antiderivations of generalized matrix algebras, Oper. Matrices, 7, 2, 399-415 (2013) · Zbl 1310.15044 · doi:10.7153/oam-07-23

[20] Li, Y-B; Xiao, Z-K, Additivity of maps on generalized matrix algebras, Electron. J. Linear Alegbra, 22, 743-757 (2011) · Zbl 1254.16034

[21] Liang, X-F; Wei, F.; Xiao, Z-K; Fosner, A., Centralizing traces and Lie triple isomorphisms on generalized matrix algebras, Linear Multilinear Algebra, 63, 9, 1786-1816 (2015) · Zbl 1326.15037 · doi:10.1080/03081087.2014.974490

[22] Loustaunau, P., Shapiro, J.: Morita contexts. In: Noncommutative Ring Theory (Athens, OH, 1989), 80-992. Lecture Notes in Mathematics, vol. 1448. Springer, Berlin (1990) · Zbl 0711.16006

[23] Marianne, M., Rings of quotients of generalized matrix rings, Commun. Algebra, 15, 1991-2015 (1987) · Zbl 0629.16013 · doi:10.1080/00927878708823519

[24] McConnell, JC; Robson, JC, Noncommutative Noetherian Rings (1987), Chichester: Wiley, Chichester · Zbl 0644.16008

[25] Morita, K., Duality for modules and its applications to the theory of rings with minimum condition, Sci. Rep. Tokyo Kyoiku Diagaku Sect. A, 6, 83-142 (1958) · Zbl 0080.25702

[26] Müller, M., Rings of quotients of generalized matrix rings, Commun. Algebra, 15, 1991-2015 (1978) · Zbl 0629.16013

[27] Sands, AD, Radicals and Morita contexts, J. Algebra, 24, 335-345 (1973) · Zbl 0253.16007 · doi:10.1016/0021-8693(73)90143-9

[28] Tang, G.; Li, C.; Zhou, Y., Study of Morita contexts, Commun. Algebra, 42, 1668-1681 (2014) · Zbl 1292.16020 · doi:10.1080/00927872.2012.748327

[29] Wei, F.; Xiao, Z-K, Commuting traces and Lie isomorphisms on generalized matrix algebras, Oper. Matrices, 8, 3, 821-847 (2014) · Zbl 1306.15024

[30] Xiao, Z-K, Jordan derivations of incidence algebras, Rocky Mt. J. Math., 45, 4, 1357-1368 (2015) · Zbl 1328.16022 · doi:10.1216/RMJ-2015-45-4-1357

[31] Xiao, Z-K; Wei, F., Commuting mappings of generalized matrix algebras, Linear Algebra Appl., 433, 11-12, 2178-2197 (2010) · Zbl 1206.15016 · doi:10.1016/j.laa.2010.08.002

[32] Xiao, Z-K; Wei, F., Jordan higher derivations on triangular algebras, Linear Algebra Appl., 433, 10, 2615-2622 (2010) · Zbl 1185.47034 · doi:10.1016/j.laa.2009.12.006

Zahiri, M.; **Moussavi, A.**; **Mohammadi, R.**
Triangular matrix rings of selfinjective rings. (English) Zbl 1492.16028
Commun. Algebra 49, No. 4, 1553-1559 (2021).

Let R be a ring, and let $n \geq 2$ be an integer. The aim of the paper is to show that R is right self-injective if and only if the upper triangular $n \times n$ matrix ring $T_n(R)$ is right generalized extending, i.e., for any right ideal N of $T_n(R)$ there exists a right ideal D, which is a direct summand of $T_n(R)$ (as a right $T_n(R)$-module), such that $N \subset D$ and D/N is a singular right $T_n(R)$-module. This answers a question in [*E. Akalan* et al., Commun. Algebra 40, No. 3, 1069–1085 (2012; Zbl 1248.16005)].

Reviewer: Sorin Dascalescu (Bucureşti)

MSC:

16S50 Endomorphism rings; matrix rings
16D50 Injective modules, self-injective associative rings

Keywords:

generalized extending rings; right self-injective rings; upper triangular matrix rings

Full Text: DOI

References:

[1] Akalan, E.; Birkenmeier, G. F.; Tercan, A., Characterizations of extending modules and \(####\)-extending generalized triangular matrix rings, Commun. Algebra, 40, 1069-1085 (2012) · Zbl 1248.16005

[2] Akalan, E.; Birkenmeier, G. F.; Tercan, A., Goldie extending modules, Commun. Algebra, 37, 2, 663-683 (2009) · Zbl 1214.16005

[3] Chatters, A. W.; Khuri, S. M., Endomorphism rings of modules over nonsingular CS Rings, J. London Math. Soc, s2-21, 3, 434-444 (1980) · Zbl 0432.16017

[4] Dung, N. V.; Huynh, D. V.; Smith, P. F.; Wisbauer, R., Pitman Research Notes in Mathematics Series, 313, Extending modules (1994), Harlow: Longman, Harlow · Zbl 0841.16001

[5] Harada, M., On modules with extending properties, Osaka J. Math, 19, 203-215 (1982) · Zbl 0491.16026

[6] Lam, T. Y., A First Course in Noncommutative Rings. (1990), New York: Springer-Verlag, Inc, New York · Zbl 0728.16001

[7] Mohammadi, R.; Moussavi, A.; Zahiri, M., A characterization of extending generalized triangular matrix rings, J. Algebra Appl · Zbl 1472.16027 · doi:10.1142/S021949882150016X

[8] Santa-Clara, C., Extending modules with injective or semisimple summands, J. Pure Appl. Algebra, 127, 2, 193-203 (1998) · Zbl 0934.16003

[9] Zeng, Q. Y., On generalized extending modules, J. Zhejiang Univ. - Sci. A, 8, 6, 939-945 (2007) · Zbl 1148.16003

[10] Utumi, Y., On continuous regular rings, Can. Math. Bull, 4, 1, 63-69 (1961) · Zbl 0178.36503

Shahidikia, Ali; Javadi, Hamid Haj Seyyed; Moussavi, Ahmad
Generalized π-Baer rings. (English) Zbl 1501.16033
Turk. J. Math. 44, No. 6, 2021-2040 (2020).

Summary: We call a ring R generalized right π-Baer, if for any projection invariant left ideal Y of R, the right annihilator of Y^n is generated, as a right ideal, by an idempotent, for some positive integer n, depending on Y. In this paper, we investigate connections between the generalized π-Baer rings and related classes of rings (e.g., π-Baer, generalized Baer, generalized quasi-Baer, etc.) In fact, generalized right π-Baer rings are special cases of generalized right quasi-Baer rings and also are a generalization of π-Baer and generalized right Baer rings. The behavior of the generalized right π-Baer condition is investigated with respect to various constructions and extensions. For example, the trivial extension of the generalized right π-Baer ring and the full matrix ring over a generalized right π-Baer ring are characterized. Also, we show that this notion is well-behaved with respect to certain triangular matrix extensions. In contrast to generalized right Baer rings, it is shown that the generalized right π-Baer condition is preserved by various polynomial extensions without any additional requirements. Examples are provided to illustrate and delimit our results.

MSC:

16U99 Conditions on elements
16D25 Ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Cited in **1** Document

Keywords:

generalized π-Baer ring; π-Baer ring; generalized quasi-Baer ring; generalized Baer ring; generalized

Full Text: DOI

References:

[1] Ahmadi M, Moussavi A, Golestani N. Generalized quasi-Baer * -rings and Banach * -algebras. Communications in Algebra 2020; 48 (5): 2207-2247. doi:10.1080/00927872.2019.1710841 · Zbl 1439.16039 · doi:10.1080/00927872.2019.1710841

[2] Bell HE. Near-Rings in which each element is a power of itself. Bulletin of the Australian Mathematical Society 1973; 2 (2): 363-368. · Zbl 0191.02902

[3] Birkenmeier GF, Heatherly HE, Kim JY, Park JK. Triangular matrix representations of ring extensions. Journal of Algebra 2000; 230: 558-595. · Zbl 0964.16031

[4] Birkenmeier GF, Kara Y, Tercan A. π -Baer rings. Journal of Algebra and Its Applications 2018; 16 (11): 1-19.

[5] Birkenmeier GF, Kim JY, Park JK. Polynomial extensions of Baer and quasi-Baer rings. Journal of Pure and Applied Algebra 2001; 159: 25-42. · Zbl 0987.16018

[6] Birkenmeier GF, Kim JY, Park JK. Principally quasi-Baer rings. Communications in Algebra 2001; 29 (2): 639-660. · Zbl 0991.16005

[7] Birkenmeier GF, Kim JY, Park JK. Quasi-Baer ring extensions and biregular rings. Bulletin of the Australian Mathematical Society 2000; 61: 39-52. · Zbl 0952.16009

[8] Birkenmeier GF, Kim JY, Park JK. Right primary and nilary rings and ideals. Journal of Algebra 2013; 378: 133-152. · Zbl 1282.16007

[9] Birkenmeier GF, Park JK, Rizvi ST. Generalized triangular matrix rings and the fully invariant extending property. Rocky Mountain Journal of Mathematics 2002; 32: 1299-1319. · Zbl 1035.16024

[10] Birkenmeier GF, Tercan A, Yücel CC. The extending condition relative to sets of submodules. Communications in Algebra 2014; 42: 764-778. · Zbl 1297.16007

[11] Birkenmeier GF, Tercan A, Yücel CC. Projection invariant extending rings. Journal of Algebra and Its Applications 2016; 15 (7): 11. · Zbl 1354.16002

[12] Brown KA. The singular ideals of group rings. Quarterly Journal of Mathematics 1977; 28: 41-60. · Zbl 0345.16012

[13] Clark WE. Twisted matrix units semigroup algebras. Duke Mathematical Journal 1997; 34: 417-424. · Zbl 0204.04502

[14] Goodearl KR, Warfield RB. An Introduction to Noncommutative Noetherian Rings. Cambridge, UK: Cambridge University Press, 1989. · Zbl 0679.16001

[15] Heatherly HE, Tucci RP. Central and semicentral idempotents. Kyungpook Mathematical Journal 2000; 40: 255-258. · Zbl 0987.16027

[16] Huh C, Kim HK, Lee Y. p.p. rings and generalized p.p. rings. Journal of Pure and Applied Algebra 2002; 167: 37-52. · Zbl 0994.16003

[17] Kaplansky I. Rings of operators. New York, NY, USA: W. A. Benjamin, 1968. · Zbl 0212.39101

[18] Lam TY. A first course in noncommutative rings. Graduate Texts in Mathematics. New York, NY, USA: Springer, 2000.

[19] Moussavi A, Javadi HHS, Hashemi E. Generalized quasi-Baer rings. Communications in Algebra 2005; 33: 2115-2129. · Zbl 1088.16018

[20] Paykan K, Moussavi A. A generalization of Baer rings. International Journal of Pure and Applied Mathematics 2015; 99 (3): 257-275.

Ahmadi, Morteza; Moussavi, Ahmad
Involutive triangular matrix algebras. (English) Zbl 1499.46110
Hacet. J. Math. Stat. 49, No. 5, 1798-1803 (2020).

Summary: In this paper we provide new examples of Banach $*$-subalgebras of the matrix algebra $\mathbf{M}_n(\mathscr{A})$ over a commutative unital C^*-algebra $\mathscr{A}$. For any involutive algebra, we define two involutions on the triangular matrix extensions. We prove that the triangular matrix algebras over any commutative unital C^*-algebra are Banach $*$-algebras and that the primitive ideals of these algebras and some of their Banach $*$-subalgebras are all maximal.

MSC:

46L05 General theory of C^*-algebras
46H10 Ideals and subalgebras

Keywords:

primitive ideal; maximal ideal; Banach $*$-algebra; C^*-algebra

Full Text: DOI

References:

1 O.M. Di Vincenzo, P. Koshlukov and R. La Scala, Involutions for upper triangular matrix algebras, Adv. in Appl. Math. 37, 541-568, 2006. · Zbl 1116.16029

2 J. Dixmier, C*-Algebras, North-Holland, Amsterdam, 1977. · Zbl 0372.46058

3 N. Jacobson, A topology for the set of primitive ideals in an arbitrary ring, Proc, Nat, Acad, Sci. U.S.A. 31, 333-338, 1945. · Zbl 0060.07402

4 T.K. Lee and Y. Zhou, Armendariz and reduced rings, Comm. Algebra 32 (6), 2287- 2299, 2004. · Zbl 1068.16037

5 G.J. Murphy, C*-Algebras and Operator Theory Academic Press, 1990. · Zbl 0714.46041

6 T.W. Palmer, Banach Algebras and the General Theory of \(\ast \)-Algebras Volume I Al- gebras and Banach Algebras, Encyclopedia of Mathematics and its Applications, Vol. 1, 1994. · Zbl 0809.46052

7 V. Paulsen, Completely Bounded Maps and Operator Algebras, vol. 78, Cambridge University Press, 2002. · Zbl 1029.47003

Amirzadeh Dana, P.; Moussavi, A.
Modules in which the annihilator of a fully invariant submodule is pure. (English) Zbl 1462.16007
Commun. Algebra 48, No. 11, 4875-4888 (2020).

Summary: A ring R is called left AIP if R modulo the left annihilator of any ideal is flat. In this paper, we characterize a module M_R for which the endomorphism ring $\mathrm{End}_R(M)$ is left AIP. We say a module M_R is endo-AIP (resp. endo-APP) if M has the property that "the left annihilator in $\mathrm{End}_R(M)$ of every fully invariant submodule of M (resp. $\mathrm{End}_R(M)m$, for every $m \in M$) is pure as a left ideal in $\mathrm{End}_R(M)$". The notion of endo-AIP (resp. endo-APP) modules generalizes the notion of Rickart and p.q.-Baer modules to a much larger class of modules. It is shown that every direct summand of an endo-AIP (resp. endo-APP)

module inherits the property and that every projective module over a left AIP (resp. APP)-ring is an endo-AIP (resp. endo-APP) module.

MSC:

16D80 Other classes of modules and ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16S50 Endomorphism rings; matrix rings

Keywords:

endo-AIP module; endo-APP module; left AIP ring; left APP-ring; pure ideal; Rickart and p.q.-Baer modules; s-unital ideal; endomorphism ring

Full Text: DOI

References:

[1] Agayev, N.; Özen, T.; Harmanci, A., On a class of semicommutative modules, Proc. Math. Sci., 119, 2, 149-158 (2009) · Zbl 1186.16016 · doi:10.1007/s12044-009-0015-2

[2] Amirzadeh Dana, P.; Moussavi, A., Endo-principally quasi Baer modules, J. Algebra Appl, 15, 2, 1550132 (2016) · Zbl 1343.16005 · doi:10.1142/S0219498815501327

[3] Birkenmeier, G. F.; Kim, J. Y.; Park, J. K., Principally quasi-Baer rings, Commun. Algebra, 29, 2, 639-660 (2001) · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[4] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J, 34, 3, 417-423 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[5] Fraser, J. A.; Nicholson, W. K., Reduced PP-ring, Math. Japonica, 34, 715-725 (1989) · Zbl 0688.16024

[6] Fuchs, L., Infinite Abelian Groups, I (1970), New York, San Francisco, London: Academic Press · Zbl 0209.05503

[7] Ghorbani, A.; Vedadi, M. R., Epi- Retractable modules and some applications, Bull. Iranian Math. Soc, 35, 1, 155-166 (2009) · Zbl 1197.16005

[8] Kaplansky, I., Projections in Banach Algebras, Ann. Math, 53, 2, 235-249 (1951) · Zbl 0042.12402 · doi:10.2307/1969540

[9] Kaplansky, I., Rings of Operators (1968), New York, NY: W. A. Benjamin, Inc, New York, NY · Zbl 0174.18503

[10] Khuri, S. M., Baer rings of endomorphisms (1974)

[11] Lam, T. Y., A First Course in Noncommutative Rings (1991), New York: Springer Verlag · Zbl 0728.16001

[12] Lam, T. Y., Lectures on Modules and Rings (1999), New York, Berlin Heidelberg: Springer Verlag · Zbl 0911.16001

[13] Lee, G.; Rizvi, S. T.; Roman, C. S., Rickart modules, Commun. Algebra, 38, 11, 4005-4027 (2010) · Zbl 1217.16003 · doi:10.1080/00927872.2010.507232

[14] Lee, G.; Rizvi, S. T.; Roman, C. S., Direct sums of Rickart modules, J. Algebra, 353, 1, 62-78 (2012) · Zbl 1275.16005 · doi:10.1016/j.jalgebra.2011.12.003

[15] Liu, Z.; Zhao, R., A generalization of PP-rings and p.q.-Baer rings, Glasg. Math. J, 48, 2, 217-229 (2006) · Zbl 1110.16003

[16] Liu, Q.; Ouyang, B. Y.; Wu, T. S., Principally quasi-Baer modules, J. Math. Res. Exposition, 29, 5, 823-830 (2009) · Zbl 1212.16017

[17] Majidinya, A.; Moussavi, A.; Paykan, K., Rings in which the annihilator of an ideal is pure, Algebra Colloq, 22, 1, 947-968 (2015) · Zbl 1345.16007

[18] Ozcan, A. C.; Harmanci, A.; Smith, P. F., Duo modules, Glasg. Math. J, 48, 3, 533-545 (2006) · Zbl 1116.16003 · doi:10.1017/S0017089506003260

[19] Rizvi, S. T.; Roman, C. S., Baer and quasi-Baer modules, Commun. Algebra, 32, 1, 103-123 (2004) · Zbl 1072.16007 · doi:10.1081/AGB-120027854

[20] Rizvi, S. T.; Roman, C. S., Baer property of modules and applications, Adv. Ring Theory, 225-241 (2005) · Zbl 1116.16303 · doi:10.1142/9789812701671$_0$021

[21] Rizvi, S. T.; Roman, C. S., On K-nonsingular modules and applications, Commun. Algebra, 35, 9, 2960-2982 (2007) · Zbl 1154.16005 · doi:10.1080/00927870701404374

[22] Rizvi, S. T.; Roman, C. S., On direct sums of Baer modules, J. Algebra, 321, 2, 682-696 (2009) · Zbl 1217.16009 · doi:10.1016/j.jalgebra.2008.10.002

[23] Stenström, B., Rings of Quotients (1975), Berlin: Springer, Berlin · Zbl 0296.16001

[24] Wolfson, K. G., A class of primitive rings, Duke Math. J, 22, 1, 157-163 (1955) · Zbl 0064.10905 · doi:10.1215/S0012-7094-55-02216-X

[25] Wolfson, K. G., Baer rings of endomorphisms, Math. Ann, 143, 1, 19-28 (1961) · Zbl 0103.02202 · doi:10.1007/BF01351889

Ahmadi, M.; **Moussavi, A.**

Rings whose singular ideals are nil. (English) Zbl 1462.16018

Commun. Algebra 48, No. 11, 4796-4808 (2020).

Summary: It is well known that when a ring R satisfies ACC on right annihilators of elements, then the right singular ideal of R is nil, in this case, we say R is right nil-singular. Many classes of rings whose singular ideals are nil, but do not satisfy the ACC on right annihilators, are presented and the behavior of them is investigated with respect to various constructions, in particular skew polynomial rings and triangular matrix rings. The class of right nil-singular rings contains π-regular rings and is closed under direct sums. Examples are provided to explain and delimit our results.

MSC:

16N40 Nil and nilpotent radicals, sets, ideals, associative rings

16D25 Ideals in associative algebras

16S36 Ordinary and skew polynomial rings and semigroup rings

Cited in **1** Document

Keywords:

nil-singular ring; nonsingular ring; π-regular ring; singular ideal; skew Laurent polynomial ring; skew polynomial ring

Full Text: DOI

References:

[1] Ahmadi, M.; Golestani, N.; Moussavi, A., Generalized quasi-Baer *-rings and Banach *-algebras, Commun. Algebra (2020) · Zbl 1439.16039 · doi:10.1080/00927872.2019.1710841

[2] Ara, P.; Park, J. K., On continuous semiprimary rings, Commun. Algebra, 19, 7, 1945-1957 (1991) · Zbl 0732.16018

[3] Badawi, A., On abelian π-regular rings, Commun. Algebra, 25, 4, 1009-1021 (1997) · Zbl 0881.16003 · doi:10.1080/00927879708825906

[4] Blackadar, B., Operator Algebras: Theory of C*-Algebras and von Neumann Algebras, 122 (2006), Berlin: Springer, Berlin · Zbl 1092.46003

[5] Chatters, A. W.; Hajarnavis, C. R., Rings with Chain Conditions (1980), Boston: Pitman, Boston · Zbl 0446.16001

[6] Chen, J.; Yang, X.; Zhou, Y., On strongly clean matrix and triangular matrix rings, Commun. Algebra, 34, 10, 3659-3674 (2006) · Zbl 1114.16024 · doi:10.1080/00927870600860791

[7] Danchev, P.; Šter, J., Generalizing π-regular rings, Taiwanese J. Math, 19, 6, 1577-1592 (2015) · Zbl 1357.16024 · doi:10.11650/tjm.19.2015.6236

[8] Faith, C., Lectures in Injective Modules and Quotient Rings, 49 (1967), Berlin: Springer-Verlag, Berlin · Zbl 0162.05002

[9] Ferrero, M.; Matczuk, J., Strongly primeness and singular ideals of skew polynomial rings, Math. J. Okayama Univ, 42, 11-18 (2000) · Zbl 1006.16032

[10] Goldie, A. W., Lectures on Rings and Modules, 246 (1971), Berlin: Springer-Verlag, Berlin · Zbl 0225.00007

[11] Hashemi, E.; Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hung, 107, 3, 207-224 (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[12] Hirano, Y., Some characterizations of π-regular rings of bounded index, Math. J. Okayama Univ, 32, 97-101 (1990) · Zbl 0744.16005

[13] Hong, C. Y.; Kim, N. K.; Kwak, T. K., On skew Armendariz rings, Commun. Algebra, 31, 1, 103-122 (2003) · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[14] Hong, C. Y.; Kim, N. K.; Lee, Y., Radicals of skew polynomial rings and skew Laurent polynomial rings, J. Algebra, 331, 1, 428-448 (2011) · Zbl 1230.16024 · doi:10.1016/j.jalgebra.2010.12.028

[15] Johnson, R. E., The extended centralizer of a ring over a module, Proc. Amer. Math. Soc, 2, 6, 891-895 (1951) · Zbl 0044.02204 · doi:10.1090/S0002-9939-1951-0045695-9

[16] Jordan, D. A., Bijective extension of injective ring endomorphisms, J. Lond. Math. Soc, s2-25, 3, 435-488 (1982) · Zbl 0486.16002 · doi:10.1112/jlms/s2-25.3.435

[17] Lam, T. Y., Lectures on Modules and Rings (1999), Berlin: Springer-Verlag, Berlin · Zbl 0911.16001

[18] Lambek, J., Lectures on Rings and Modules (1986), New York: Chelsea, New York · Zbl 0143.26403

[19] Lawrence, J., A singular primitive ring, Proc. Amer. Math. Soc, 45, 1, 59-62 (1974) · Zbl 0301.16006 · doi:10.1090/S0002-9939-1974-0357466-X

[20] Lee, T. K.; Zhou, Y., Armendariz and reduced rings, Commun. Algebra, 32, 6, 2287-2299 (2004) · Zbl 1068.16037 · doi:10.1081/AGB-120037221

[21] McCoy, N. H., Generalized regular rings, Bull. Amer. Math. Soc, 45, 2, 175-178 (1939) · Zbl 0020.20001 · doi:10.1090/S0002-9904-1939-06933-4

[22] Nasr-Isfahani, A. R., Jacobson radicals of skew polynomial rings of derivation type, Can. Math. Bull, 57, 3, 609-613 (2014) ·

Zbl 1308.16023 · doi:10.4153/CMB-2014-018-9

[23] Nasr-Isfahani, A. R., On a quotient of skew polynomial rings, Commun. Algebra, 41, 12, 4520-4533 (2013) · Zbl 1296.16027 · doi:10.1080/00927872.2012.705403

[24] Nasr-Isfahani, A. R., Ore extensions of 2-primal rings, J. Algebra Appl, 13, 3, 1350117 (2014) · Zbl 1291.16020 · doi:10.1142/S021949881350117X

[25] Nasr-Isfahani, A. R., Radicals of skew polynomial and skew Laurent polynomial rings over skew Armendariz rings, Commun. Algebra, 42, 3, 1337-1349 (2014) · Zbl 1302.16022 · doi:10.1080/00927872.2012.738746

[26] Nasr-Isfahani, A. R.; Moussavi, A., Ore extensions of skew Armendariz rings, Commun. Algebra, 36, 2, 508-522 (2008) · Zbl 1142.16016 · doi:10.1080/00927870701718849

[27] Nicholson, W. K.; Yousif, M. F., Quasi-Frobenius Rings (2003), Cambridge University Press · Zbl 1042.16009

[28] Osofsky, B., A non-trivial ring with non-rational injective hull, Can. Math. Bull, 10, 275-282 (1967) · Zbl 0159.04304

[29] Rizvi, S. T., Commutative rings for which every continuous module is quasi-injective, Arch. Math, 50, 435-442 (1988) · Zbl 0631.13012

Paykan, Kamal; Moussavi, Ahmad

Some characterizations of 2-primal skew generalized power series rings. (English)

Zbl 1446.16030

Commun. Algebra 48, No. 6, 2346-2357 (2020).

The skew generalized power series ring $R[\![S,\omega]\!]$ is the ring consisting of all functions from a strictly ordered monoid S to a ring R whose support contains neither infinite descending chains nor infinite antichains, with pointwise addition, and with multiplication given by a convolution twisted by the action ω of the monoid S on the ring R.

The prime radical of a ring T and the set of all nilpotent elements in T are denoted by $P(T)$ and $\mathrm{nil}(T)$, respectively. Recall that $P(T)$ is the set of all strongly nilpotent elements of T. The ring T is called 2-primal if $P(T) = \mathrm{nil}(T)$.

The goal of this paper is to provide necessary and sufficient conditions for $R[\![S,\omega]\!]$ to be 2-primal (Theorem 3.6 and 3.16). In particular, the authors show that when S is a strictly ordered artinian narrow unique product monoid, $\omega : S \to \mathrm{End}(R)$ is a monoid homomorphism, R is S-compatible and $P(R)$ is a nilpotent ideal, the ring $R[\![S,\omega]\!]$ is 2-primal if and only if R is.

Reviewer: Adam Chapman (Tel Hai)

MSC:

16S99 Associative rings and algebras arising under various constructions
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **4** Documents

Keywords:

skew generalized power series ring; 2-primal; minimal prime ideal; (S,w)-prime; prime radical

Full Text: DOI

References:

[1] Birkenmeier, G. F.; Heatherly, H. E.; Lee, E. K.; Jain, S. K.; Rizvi, S. T., Proceedings of Biennial Ohio State-Denison Conference, Completely prime ideals and associated radicals, 102-129 (1992), Singapore: World Scientific, Singapore · Zbl 0853.16022

[2] Birkenmeier, G. F.; Park, J. K., Triangular matrix representations of ring extensions, J. Algebra, 265, 2, 457-477 (2003) · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[3] Chatters, A. W.; Hajarnavis, C. R., Rings with Chain Conditions, 44 (1980), Boston, MA: Pitman (Advanced Publishing Program), Boston, MA · Zbl 0446.16001

[4] Cohn, P. M., Free Rings and Their Relations (1985), London, UK: Academic Press, London, UK · Zbl 0659.16001

[5] Elliott, G. A.; Ribenboim, P., Fields of generalized power series, Arch. Math., 54, 4, 365-371 (1990) · Zbl 0676.13010 · doi:10.1007/BF01189583

[6] Farbman, S. P., The unique product property of groups and their amalgamated free products, J. Algebra, 178, 3, 962-990 (1995) · Zbl 0847.20021 · doi:10.1006/jabr.1995.1385

[7] Fields, D. E., Zero divisors and nilpotent elements in power series rings, Proc. Am. Math. Soc., 27, 3, 427-433 (1971) · Zbl 0219.13023 · doi:10.1090/S0002-9939-1971-0271100-6

[8] Hashemi, E.; Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar., 107, 3, 207-224 (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[9] Herstein, I. N.; Small, L. W., Nil rings satisfying certain chain conditions, Can. J. Math., 16, 771-776 (1964) · Zbl 0129.02004 · doi:10.4153/CJM-1964-074-0

[10] Hirano, Y., Some studies on strongly π-regular rings, Math. J. Okayama Univ., 20, 1978, 141-149 (1978) · Zbl 0394.16011

[11] Krempa, J., Some examples of reduced rings, Algebra Colloq., 3, 4, 289-300 (1996) · Zbl 0859.16019

[12] Lam, T. Y., A First Course in Noncommutative Rings (1991), New York, NY: Springer-Verlag, New York, NY · Zbl 0728.16001

[13] Lam, T. Y.; Leroy, A.; Matczuk, J., Primeness, semiprimeness and prime radical of Öre extensions, Commun. Algebra, 25, 8, 2459-2506 (1997) · Zbl 0879.16016 · doi:10.1080/00927879708826000

[14] Lanski, C., Nil subrings of Goldie rings are nilpotent, Can. J. Math., 21, 904-907 (1969) · Zbl 0182.36701 · doi:10.4153/CJM-1969-098-x

[15] Lee, Y.; Huh, C.; Kim, H. K., Questions on 2-primal rings, Commun. Algebra, 26, 2, 595-600 (1998) · Zbl 0901.16009 · doi:10.1080/00927879808826150

[16] Lenagan, T. H., Nil ideals in rings with finite Krull dimension, J. Algebra, 29, 1, 77-87 (1974) · Zbl 0277.16014 · doi:10.1016/0021-8693(74)90112-4

[17] Liu, Z. K., Triangular matrix representations of rings of generalized power series, Acta Math. Sinica, 22, 4, 989-998 (2006) · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[18] Marks, G., Skew polynomial rings over 2-primal rings, Commun. Algebra, 27, 9, 4411-4423 (1999) · Zbl 0957.16019 · doi:10.1080/00927879908826705

[19] Marks, G., On 2-primal Öre extensions, Commun. Algebra, 29, 5, 2113-2123 (2001) · Zbl 1005.16027 · doi:10.1081/AGB-100002173

[20] Marks, G.; Mazurek, R.; Ziembowski, M., A new class of unique product monoids with applications to ring theory, Semigroup Forum, 78, 2, 210-225 (2009) · Zbl 1177.16030 · doi:10.1007/s00233-008-9063-7

[21] Marks, G.; Mazurek, R.; Ziembowski, M., A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc., 81, 3, 361-397 (2010) · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[22] Mazurek, R., Left principally quasi-Baer and left APP-rings of skew generalized power series, J. Algebra Appl., 14, 3, 1550038 (2015) · Zbl 1327.16036 · doi:10.1142/S0219498815500383

[23] Mazurek, R.; Paykan, K., Simplicity of skew generalized power series rings, New York J. Math., 23, 1273-1293 (2017) · Zbl 1384.16036

[24] Mazurek, R.; Ziembowski, M., On Von Neumann regular rings of skew generalized power series, Commun. Algebra, 36, 5, 1855-1868 (2008) · Zbl 1159.16032 · doi:10.1080/00927870801941150

[25] Nasr-Isfahani, A. R., Öre extensions of 2-primal rings, J. Algebra Appl., 13, 3, 1350117 (2014) · Zbl 1291.16020 · doi:10.1142/S021949881350117X

[26] Paykan, K.; Moussavi, A.; Zahiri, M., Special properties of rings of skew generalized power series, Commun. Algebra, 42, 12, 5224-5248 (2014) · Zbl 1297.16045 · doi:10.1080/00927872.2013.836532

[27] Paykan, K.; Moussavi, A., Baer and quasi-Baer properties of skew generalized power series rings, Commun. Algebra, 44, 4, 1615-1635 (2016) · Zbl 1346.16042 · doi:10.1080/00927872.2015.1027370

[28] Paykan, K.; Moussavi, A., McCoy property and nilpotent elements of skew generalized power series rings, J. Algebra Appl., 16, 10, 1750183 (2017) · Zbl 1383.16037 · doi:10.1142/S0219498817501833

[29] Paykan, K.; Moussavi, A., Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Commun. Algebra, 45, 6, 2306-2324 (2017) · Zbl 1395.16048 · doi:10.1080/00927872.2016.1233198

[30] Paykan, K.; Moussavi, A., Some results on skew generalized power series rings, Taiwanese J. Math., 21, 1, 11-26 (2017) · Zbl 1358.13023 · doi:10.11650/tjm.21.2017.7327

[31] Ribenboim, P., Some examples of valued fields, J. Algebra, 173, 3, 668-678 (1995) · Zbl 0846.12005 · doi:10.1006/jabr.1995.1108

[32] Ribenboim, P., Special properties of generalized power series, J. Algebra, 173, 3, 566-586 (1995) · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103

[33] Ribenboim, P., Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra, 198, 2, 327-338 (1997) · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063

[34] Rowen, L. H., Ring Theory I (1988), New York, NY: Academic Press, New York, NY

[35] Shin, G. Y., Prime ideals and sheaf representation of a pseudo symmetric rings, Trans. Amer. Math. Soc., 184, 43-60 (1973) · Zbl 0283.16021 · doi:10.1090/S0002-9947-1973-0338058-9

[36] Sun, S.-H., Noncommutative rings in which every prime ideal is contained in a unique maximal ideal, J. Pure Appl. Algebra, 76, 2, 179-192 (1991) · Zbl 0747.16001 · doi:10.1016/0022-4049(91)90060-F

[37] Tehranchi, A.; Paykan, K., A characterization of 2-primal and NI rings over skew inverse Laurent series rings, J. Algebra Appl., 18, 12, 1950221-1950216 (2019) · Zbl 1430.16033 · doi:10.1142/S0219498819502219

[38] Wang, Y.; Chen, W., Minimal prime ideals and units in 2-primal Öre extensions, J. Math. Res. Appl., 38, 4, 377-383 (2018) · Zbl 1424.16044

Ahmadi, Morteza; Golestani, Nasser; Moussavi, Ahmad
Generalized quasi-Baer $*$-rings and Banach $*$-algebras. (English) Zbl 1439.16039
Commun. Algebra 48, No. 5, 2207-2247 (2020).

A ring with involution is a quasi-Baer $*$-ring (respectively principally quasi-Baer $*$-ring) if the right annihilator of every ideal (respectively principal ideal) is generated by a projection. The authors generalize these concepts by defining a $*$-ring R to be a generalized (principally) quasi-Baer $*$-ring if for any (principal) ideal I of R, there is a positive integer n such that the right annihilator of I^n is generated by a projection. In the introduction of the paper, the authors expand on the motivation for these generalizations from perspectives of both algebra and operator theory.

The authors prove numerous properties of the newly introduced classes of rings. They supplement their work by many examples illustrating the difference between the classes they consider and some other generalizations of Baer-type and Rickart-type properties. After this, the authors consider matrix rings, group rings and polynomial extensions and their various subrings and study the conditions for these $*$-rings to be generalized quasi-Baer. They also provide sheaf representations of the classes of $*$-rings under consideration.

The authors show that the classes of quasi-Baer $*$-rings and generalized quasi-Baer $*$-rings coincide for pre-C^*-algebras while they are different for Banach $*$-algebras. For a locally compact abelian group G, the authors show that the algebras $L^1(G)$ and $C^*(G)$ are generalized quasi-Baer $*$-rings if and only if G is finite. They provide a similar characterization also for a Leavitt path algebra $L_K(E)$ of a finite directed graph E over a field K.

Reviewer: Lia Vas (Philadelphia)

MSC:

16W10	Rings with involution; Lie, Jordan and other nonassociative structures
16D25	Ideals in associative algebras
16S10	Associative rings determined by universal properties (free algebras, coproducts, adjunction of inverses, etc.)
46L05	General theory of C^*-algebras
46K05	General theory of topological algebras with involution

Cited in **8** Documents

Keywords:

Baer $*$-ring; quasi-Baer $*$-ring; generalized quasi-Baer ring; generalized quasi-Baer $*$-ring; primary ring; Banach $*$-algebra; C^*-algebra; Leavitt path algebra

Full Text: DOI

References:

[1] Abrams, G.; Ara, P.; Siles Molina, M., Leavitt Path Algebras (2017), London: Springer-Verlag, London · Zbl 1393.16001

[2] Ahmadi, M.; Moussavi, A.

[3] Aranda Pino, G.; Vaš, L., Noetherian Leavitt path algebras and their regular algebras, Mediterr. J. Math. Math, 10, 4, 1633-1656 (2013) · Zbl 1308.16004 · doi:10.1007/s00009-013-0320-y

[4] Arhangel'skii, A., A study of extremely disconnected topological spaces, Bull. Math. Sci., 1, 3-12 (2011) · Zbl 1257.54008 · doi:10.1007/s13373-011-0001-8

[5] Armendariz, E. P., A note on extensions of Baer and p.p, J. Aust. Math. Soc, 18, 4, 470-473 (1974) · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[6] Azumaya, G., Strongly π-regular rings, J. Fac. Sci. Hokkaido Univ. Ser. I Math. Univ., 13, 1, 34-39 (1954) · Zbl 0058.02503 · doi:10.14492/hokmj/1530842562

[7] Bell, H. E.; Li, Y., On duo group rings, J. Pure Appl. Algebra, 209, 3, 833-838 (2007) · Zbl 1124.16020 · doi:10.1016/j.jpaa.2006.08.002

[8] Berberian, S. K., Grundlehren Math. Wiss, 195, Baer *-rings (1972), Berlin: Springer, Berlin · Zbl 0242.16008

[9] Birkenmeier, G. F.; Groenewald, N. J.; Heatherly, H. E., Minimal and maximal ideals in rings with involution, Beiträge Algebra Geom., 38, 2, 217-225 (1997) · Zbl 0884.16021

[10] Birkenmeier, G. F.; Heatherly, H. E.; Kim, J. Y.; Park, J. K., Triangular matrix representations of ring extensions, J. Algebra, 230, 2, 558-595 (2000) · Zbl 0964.16031 · doi:10.1006/jabr.2000.8328

[11] Birkenmeier, G. F.; Kim, J. Y.; Park, J. K., A sheaf representation of quasi-Baer rings, J. Pure Appl. Algebra, 146, 3, 209-223 (2000) · Zbl 0947.16018 · doi:10.1016/S0022-4049(99)00164-4

[12] Birkenmeier, G. F.; Kim, J. Y.; Park, J. K., Polynomial extensions of baer and quasi-Baer rings, J. Pure Appl. Algebra, 159, 1, 25-42 (2001) · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[13] Birkenmeier, G. F.; Kim, J. Y.; Park, J. K., Principally quasi-Baer rings, Commun. Algebra, 29, 2, 639-660 (2001) · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[14] Birkenmeier, G. F.; Kim, J. Y.; Park, J. K., Right primary and nilary rings and ideals, J. Algebra, 378, 133-152 (2013) · Zbl 1282.16007 · doi:10.1016/j.jalgebra.2012.12.016

[15] Birkenmeier, G. F.; Park, J. K., Self-adjoint ideals in Baer *-rings, Commun. Algebra, 28, 9, 4259-4268 (2000) · Zbl 0982.16024 · doi:10.1080/00927870008827088

[16] Birkenmeier, G. F.; Park, J. K.; Tariq Rizvi, S., Hulls of semiprime rings with applications to C*-algebras, J. Algebra, 322, 2, 327-352 (2009) · Zbl 1195.16005 · doi:10.1016/j.jalgebra.2009.03.036

[17] Blackadar, B., Encyclop Math Sci, 122, Operator algebras: theory of C*-algebras and von Neumann algebras (2006), Berlin: Springer, Berlin · Zbl 1092.46003

[18] Dilworth, R. P., Noncommutative residuated lattices, Trans. Amer. Math. Soc, 46, 426-444 (1939) · Zbl 65.0084.02 · doi:10.1090/S0002-9947-1939-0000230-5

[19] Chatters, A. W.; Hajarnavis, C. R., Rings with Chain Conditions (1980), Boston-London-Melbourne: Pitman, Boston-London-Melbourne · Zbl 0446.16001

[20] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J., 34, 3, 417-424 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[21] Di Vincenzo, O. M.; Koshlukov, P.; La Scala, R., Involutions for upper triangular matrix algebras, Adv. in Appl. Math., 37, 4, 541-568 (2006) · Zbl 1116.16029 · doi:10.1016/j.aam.2005.07.004

[22] Dischinger, M. F., Sur les anneaux fortement π-reguliers, C.R. Acad. Sci. Paris, Ser. A., 283, 571-573 (1976) · Zbl 0338.16001

[23] Dixmier, J., C*-Algebras (1977), Amsterdam: North-Holland, Amsterdam · Zbl 0372.46058

[24] Folland, G. B., A Course in Abstract Harmonic Analysis (1995), Boca Raton, FL: CRC Press, Boca Raton, FL · Zbl 0857.43001

[25] Gorton, C.; Heatherly, H. E.; Tucci, R. P., Generalized primary rings, Int. Electron. J. Algebra, 12, 116-132 (2012) · Zbl 1263.16002

[26] Handelman, D. E., \(Pr####\) fer domains and Baer *-rings, Arch. Math., 29, 241-251 (1977) · Zbl 0374.13014 · doi:10.1007/BF01220401

[27] Handelman, D. E., Coordinatization applied to finite Baer *-rings, Trans. Amer. Math. Soc., 235, 1-34 (1978) · Zbl 0369.46053 · doi:10.2307/1998207

[28] Hazrat, R.; Vaš, L., Baer and Baer \(####\)-ring characterizations of Leavitt path algebras, J. Pure Appl. Algebra, 222, 1, 39-60 (2018) · Zbl 1383.16024 · doi:10.1016/j.jpaa.2017.03.003

[29] Kaplansky, I., Topological representations of algebras II, Trans. Amer. Math. Soc., 68, 1, 62-75 (1950) · Zbl 0035.30301 · doi:10.1090/S0002-9947-1950-0032612-4

[30] Kaplansky, I., Projections in Banach algebras, Ann. Math., 53, 2, 235-249 (1951) · Zbl 0042.12402 · doi:10.2307/1969540

[31] Kaplansky, I., Rings of Operators (1968), New York: Benjamin, New York · Zbl 0174.18503

[32] Larki, H., Ideal structure of Leavitt path algebras with coefficients in a unital commutative ring, Commun. Algebra, 43, 12, 5031-5058 (2015) · Zbl 1333.16009 · doi:10.1080/00927872.2014.946133

[33] Lam, T. Y., Graduate Texts in Mathematics, 131, A first course in noncommutative rings (2000), New York: Springer, New York

[34] Lam, T. Y., Lectures on Modules and Rings (1999), Berlin-Heidelberg-New York: Springer-Verlag, Berlin-Heidelberg-New York · Zbl 0911.16001

[35] Lawrence, J., A singular primitive ring, Proc. Amer. Math. Soc., 45, 1, 59-62 (1974) · Zbl 0301.16006 · doi:10.1090/S0002-9939-1974-0357466-X

[36] Lee, T. K.; Zhou, Y., Armendariz and reduced rings, Commun. Algebra, 32, 6, 2287-2299 (2004) · Zbl 1068.16037 · doi:10.1081/AGB-120037221

[37] Li, Y.; Parmenter, M. M., Reversible group rings over commutative rings, Commun. Algebra, 35, 12, 4096-4104 (2007) · Zbl 1134.16009 · doi:10.1080/00927870701544856

[38] Lopatkin, V.; Nam, T. G., On the homological dimensions of Leavitt path algebras with coefficients in commutative rings, J. Algebra, 481, 273-292 (2017) · Zbl 1394.16034 · doi:10.1016/j.jalgebra.2017.02.027

[39] Milies, C. P.; Sehgal, S. K., An introduction to group rings, Algebras Appl., 1 (2002) · Zbl 0997.20003

[40] Moussavi, A.; Javadi, H. H. S.; Hashemi, E., Generalized quasi-Baer rings, Commun. Algebra, 33, 7, 2115-2129 (2005) · Zbl 1088.16018 · doi:10.1081/AGB-200063514

[41] Murphy, G. J., C*-Algebras and Operator Theory (1990), Cambridge: Academic Press, Cambridge · Zbl 0714.46041

[42] Nasr-Isfahani, A. R.; Moussavi, A., On ore extensions of Quasi-Baer rings, J. Algebra Appl. Appl, 07, 2, 211-224 (2008) · Zbl 1157.16008 · doi:10.1142/S0219498808002771

[43] Palmer, T. W., Banach algebras and the general theory of *-algebras, volume II, *-algebras, Encycl. Math. Appl., 2 (2001) · Zbl 0983.46040

[44] Paulsen, V., Completely Bounded Maps and Operator Algebras, 78 (2002), Cambridge: Cambridge University Press, Cambridge · Zbl 1029.47003

[45] Rickart, C. E., Banach algebras with an adjoint operation, Ann. Math., 47, 3, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[46] Shin, G., Prime ideals and sheaf representation of a pseudo symmetric ring, Trans. Amer. Math. Soc., 184, 43-61 (1973) · Zbl 0283.16021 · doi:10.1090/S0002-9947-1973-0338058-9

[47] Takesaki, M., Encycl. Math. Sci., 124, Operator Algebras I (2001), Berlin: Springer, Berlin · Zbl 0990.46034

[48] Tomforde, M., Leavitt path algebras with coefficients in a commutative ring, J. Pure Appl. Algebra, 215, 4, 471-484 (2011) · Zbl 1213.16010 · doi:10.1016/j.jpaa.2010.04.031

[49] Wegge-Olsen, N. E., K-Theory and C*-Algebras (1993), New York: The Clarendon Press, New York

[50] Yi, Z.; Zhou, Y., Baer and quasi-Baer properties of group rings, J. Aust. Math. Soc., 83, 2, 285-296 (2007) · Zbl 1142.16012 · doi:10.1017/S1446788700036909

Dana, P. Amirzadeh; Moussavi, A.

Polynomial extensions of modules with the quasi-Baer property. (English) Zbl 1475.16011

J. Algebra 542, 230-248 (2020).

All rings R in this paper have identity and all modules M_R are right and unital. For an arbitrary nonempty set of not necessarily commuting indeterminates X, let $R[X]$, $R[[X]]$ (respectively, $M[X]$ and $M[[X]]$) be polynomial ring, formal polynomial ring (modules, respectively, extended form the module M). When $X = \{x\}$, $R[X]$ is denoted as $R[x]$ as usual. Let $S =: \mathrm{End}_R(M)$ be the endomorphism ring of M_R. Recall that a ring R is (quasi-)Baer if the right annihilator of every nonempty subset (resp. right ideal) of R is generated (as a right ideal) by an idempotent of R. In the first section, the authors give a detailed survey of studies on the quasi-Baer property of rings and modules and other closely related topics. In the second section, the authors first show that $\mathrm{End}_{R[x]}(M[x])$ is isomorphic to a subring of $S[[x]]$, while $\mathrm{End}_{R[[x]]}(M[[x]])$ is isomorphic to $S[[x]]$. As a consequence, M_R is quasi-Baer if and only if $M[X]_{R[X]}$ is quasi-Baer if and only if $M[[X]]_{R[[X]]}$ is quasi-Baer. For a module with IFP (i.e., insertion of factors property), similar results are also included. For finitely generated M_R such that every semicentral idempotent in S is central, similar results are obtained for endo-p.q.-Baer. There appeared two repetitions in the abstract.

Reviewer: Tongsuo Wu (Shanghai)

MSC:

16D80 Other classes of modules and ideals in associative algebras
16D40 Free, projective, and flat modules and ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Keywords:

Baer rings and modules; quasi-Baer rings and modules; p.q.-Baer modules

Full Text: DOI

References:

[1] Amirzadeh Dana, P.; Moussavi, A., Endo-principally quasi Baer modules, J. Algebra Appl., 15, 2, Article 1550132 pp. (2016) · Zbl 1343.16005

[2] Armendariz, E., A note on extensions of Baer and pp-rings, J. Aust. Math. Soc., 18, 4, 470-473 (1974) · Zbl 0292.16009

[3] Birkenmeier, G., Idempotents and completely semiprime ideals, Comm. Algebra, 11, 6, 567-580 (1983) · Zbl 0505.16004

[4] Birkenmeier, G.; Kim, J.; Park, J., On polynomial extensions of principally quasi-Baer rings, Kyungpook Math. J., 40, 2, 247-253 (2000) · Zbl 0987.16017

[5] Birkenmeier, G.; Kim, J.; Park, J., Principally quasi-Baer rings, Comm. Algebra, 29, 639-660 (2001) · Zbl 0991.16005

[6] Birkenmeier, G.; Kim, J.; Park, J., Polynomal extensions of Baer and quasi-Baer rings, J. Pure Appl. Algebra, 15, 1, 25-42 (2001) · Zbl 0987.16018

[7] Clark, W., Twisted matrix units semigroup algebras, Duke Math. J., 34, 3, 417-423 (1967) · Zbl 0204.04502

[8] Cheng, Y.; Huang, F., A note on extensions of principally quasi-Baer rings, Taiwanese J. Math., 12, 7, 1721-1731 (2008) · Zbl 1169.16015

[9] Kaplansky, I., Rings of Operators (1968), W.A. Benjamin: W.A. Benjamin New York · Zbl 0212.39101

[10] Lee, T.; Zhou, Y., Reduced modules. Rings, modules, algebras, and Abelian groups, Lect. Notes Pure Appl. Math., 236, 365-377 (2004) · Zbl 1075.16003

[11] Liu, Q.; Ouyang, B.; Wu, T., Principally quasi-Baer modules, J. Math. Res. Appl., 29, 5, 823-830 (2009) · Zbl 1212.16017

[12] Liu, Z., A note on principally quasi-Baer rings, Comm. Algebra, 30, 8, 3885-3890 (2002) · Zbl 1018.16023

[13] Liu, Z.; Zhang, W., Principal quasi-Baerness of formal power series rings, Acta Math. Sin. (Engl. Ser.), 26, 11, 2231-2238 (2010) · Zbl 1209.16035

[14] ollingher, P. A.; Zaks, A., On Baer and quasi-Baer rings, Duke Math. J., 37, 1, 127-138 (1970) · Zbl 0219.16010

[15] Rizvi, S.; Roman, C., Baer and quasi-Baer modules, Comm. Algebra, 32, 1, 103-123 (2004) · Zbl 1072.16007

[16] Rizvi, S.; Roman, C., Baer property of modules and applications, (Advances in Ring Theory (2005)), 225-241 · Zbl 1116.16303

[17] Rizvi, S.; Roman, C., On \(K\)-nonsingular modules and applications, Comm. Algebra, 35, 9, 2960-2982 (2007) · Zbl 1154.16005

[18] Rizvi, S.; Roman, C., On direct sums of Baer modules, J. Algebra, 321, 2, 682-696 (2009) · Zbl 1217.16009

Paykan, Kamal; Moussavi, Ahmad

Differential extensions of weakly principally quasi-Baer rings. (English) Zbl 1466.16019

Acta Math. Vietnam. 44, No. 4, 977-991 (2019).

Summary: A ring R is called weakly principally quasi-Baer or simply (weakly p.q.-Baer) if the right annihilator of a principal right ideal is right s-unital by right semicentral idempotents, which implies that R modulo, the right annihilator of any principal right ideal, is flat. We study the relationship between the weakly p.q.-Baer property of a ring R and those of the differential polynomial extension $R[x;\delta]$, the pseudo-differential operator ring $R((x^{-1};\delta))$, and also the differential inverse power series extension $R[[x^{-1};\delta]]$ for any derivation δ of R. Examples to illustrate and delimit the theory are provided.

MSC:

16N40 Nil and nilpotent radicals, sets, ideals, associative rings

16N60 Prime and semiprime associative rings

16S90 Torsion theories; radicals on module categories (associative algebraic aspects)

16S36 Ordinary and skew polynomial rings and semigroup rings

Cited in **5** Documents

Keywords:

differential polynomial ring; pseudo-differential operator ring; differential inverse power series ring; (weakly) p.q.-Baer; APP ring; AIP ring; s-unital ideal

Full Text: DOI

References:

[1] Armendariz, E.P.: A note on extensions of Baer and p.p.-rings. J. Austral. Math. Soc. 18, 470-473 (1974) · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[2] Berberian, S.K.: Baer ∗-Rings. Springer, New York (1972) · Zbl 0242.16008 · doi:10.1007/978-3-642-15071-5

[3] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: On quasi-Baer rings. Algebra and Its Applications, 67-92. Contemp. Math., vol. 259. Am. Math. Soc., Providence (2000) · Zbl 0974.16006

[4] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: Principally quasi-Baer rings. Comm. Algebra 29(2), 639-660 (2001) · Zbl 0991.16005

· doi:10.1081/AGB-100001530

[5] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: Polynomial extensions of Baer and quasi-Baer rings. J. Pure Appl. Algebra 159(1), 25-42 (2001) · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[6] Birkenmeier, G.F., Park, J.K.: Triangular matrix representations of ring extensions. J. Algebra 265(2), 457-477 (2003) · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[7] Chase, S.U.: A generalization the ring of triangular matrices. Nagoya Math. J. 18, 13-25 (1961) · Zbl 0113.02901 · doi:10.1017/S0027763000002208

[8] Cheng, Y., Huang, F.K.: A note on extensions of principally quasi-Baer rings. Taiwanese J. Math. 12(7), 1721-1731 (2008) · Zbl 1169.16015 · doi:10.11650/twjm/1500405082

[9] Clark, W.E.: Twisted matrix units semigroup algebras. Duke Math. J. 34, 417-423 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[10] Dzhumadil'daev, A.S.: Derivations and central extensions of the Lie algebra of formal pseudo differential operators. Algebra i Anal. 6(1), 140-158 (1994) · Zbl 0814.17020

[11] Goodearl, K.R.: Centralizers in differential, pseudo differential, and fractional differential operator rings. Rocky Mountain J. Math. 13(4), 573-618 (1983) · Zbl 0532.16002 · doi:10.1216/RMJ-1983-13-4-573

[12] Goodearl, K.R., Warfield, R.B.: An Introduction to Noncommutative Noetherian Rings. Cambridge University Press, Cambridge (1989) · Zbl 0679.16001

[13] Hirano, Y.: On annihilator ideals of a polynomial ring over a noncommutative ring. J. Pure Appl. Algebra 168(1), 45-52 (2002) · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[14] Kaplansky, I.: Projections in Banach Algebras. Ann. of Math. (2) 53, 235-249 (1951) · Zbl 0042.12402 · doi:10.2307/1969540

[15] Kaplansky, I.: Rings of Operators. Benjamin, New York (1968) · Zbl 0174.18503

[16] Lam, T.Y.: Lectures on modules and rings Graduate Texts in Math, vol. 189. Springer, New York (1999) · Zbl 0911.16001 · doi:10.1007/978-1-4612-0525-8

[17] Letzter, E.S., Wang, L.: Noetherian skew inverse power series rings. Algebr. Represent. Theory 13(3), 303-314 (2010) · Zbl 1217.16038 · doi:10.1007/s10468-008-9123-4

[18] Liu, Z.: A note on principally quasi-Baer rings. Comm. Algebra 30(8), 3885-3890 (2002) · Zbl 1018.16023 · doi:10.1081/AGB-120005825

[19] Liu, Z., Zhao, R.: A generalization of PP-rings and p.q.-Baer rings. Glasg. Math. J. 48(2), 217-229 (2006) · Zbl 1110.16003 · doi:10.1017/S0017089506003016

[20] Majidinya, A., Moussavi, A., Paykan, K.: Generalized APP-rings. Comm. Algebra 41(12), 4722-4750 (2013) · Zbl 1300.16002 · doi:10.1080/00927872.2011.636414

[21] Majidinya, A., Moussavi, A., Paykan, K.: Rings in which the annihilator of an ideal is pure. Algebra Colloq. 22(1), 947-968 (2015) · Zbl 1345.16007 · doi:10.1142/S1005386715000796

[22] Majidinya, A., Moussavi, A.: Weakly principally quasi-Baer rings. J. Algebra Appl. 15(1), 20 (2016) · Zbl 1343.16001 · doi:10.1142/S021949881650002X

[23] Manaviyat, R., Moussavi, A., Habibi, M.: Principally quasi-Baer skew power series modules. Comm. Algebra 41(4), 1278-1291 (2013) · Zbl 1272.16041 · doi:10.1080/00927872.2011.615357

[24] Manaviyat, R., Moussavi, A.: On annihilator ideals of pseudo-differential operator rings. Algebra Colloq. 22(4), 607-620 (2015) · Zbl 1387.16018 · doi:10.1142/S1005386715000528

[25] Nasr-Isfahani, A.R., Moussavi, A.: On weakly rigid rings. Glasg. Math. J. 51 (3), 425-440 (2009) · Zbl 1184.16026 · doi:10.1017/S0017089509005084

[26] Paykan, K., Moussavi, A.: Special properties of diffreential inverse power series rings. J. Algebra Appl. 15(10), 23 (2016) · Zbl 1375.16019 · doi:10.1142/S0219498816501814

[27] Paykan, K., Moussavi, A.: Study of skew inverse Laurent series rings. J. Algebra Appl. 16(12), 33 (2017) · Zbl 1392.16041 · doi:10.1142/S0219498817502218

[28] Paykan, K.: Skew inverse power series rings over a ring with projective socle. Czechoslovak Math. J. 67(2), 389-395 (2017) · Zbl 1458.16050 · doi:10.21136/CMJ.2017.0672-15

[29] Paykan, K., Moussavi, A.: Primitivity of skew inverse Laurent series rings and related rings. J. Algebra Appl. https://doi.org/10.1142/S02194988195 (2019) · Zbl 1489.16044

[30] Pollingher, A., Zaks, A.: On Baer and quasi-Baer rings. Duke Math. J. 37, 127-138 (1970) · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X

[31] Rickart, C.E.: Banach algebras with an adjoint operation. Ann. of Math. (2) 47, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[32] Schur, I.: Uber vertauschbare lineare Differentialausdrucke, Sitzungsber. Berliner Math. Ges. 4, 2-8 (1905) · Zbl 36.0387.01

[33] Small, L.W.: Semihereditary rings. Bull. Am. Math. Soc. 73, 656-658 (1967) · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3

[34] Stenström, B.: Rings of Quotients. Springer, New York-Heidelberg (1975) · Zbl 0296.16001 · doi:10.1007/978-3-642-66066-5

[35] Tominaga, H.: On s-unital rings. Math. J. Okayama Univ. 18(2), 117-134 (1975/76) · Zbl 0335.16020

[36] Tuganbaev, D.A.: Laurent series rings and pseudo-differential operator rings. J. Math. Sci. (N.Y.) 128(3), 2843-2893 (2005) · Zbl 1122.16033 · doi:10.1007/s10958-005-0244-6

Moussavi, Ahmad; **Padashnik, Farzad**; **Paykan, Kamal**
Archimedean skew generalized power series rings. (English) Zbl 1423.16041
Commun. Korean Math. Soc. 34, No. 2, 361-374 (2019).

Summary: Let R be a ring, $(S, \leq)$ a strictly ordered monoid, and $\omega : S \to \mathrm{End}(R)$ a monoid homomorphism. In [J. Algebra 322, No. 4, 983–994 (2009; Zbl 1188.16040)], *R. Mazurek* and *M. Ziembowski* investigated when the skew generalized power series ring $R[[S, \omega]]$ is a domain satisfying the ascending chain condition on principal left (resp. right) ideals. Following [loc. cit.], we obtain necessary and sufficient conditions on R, S and ω such that the skew generalized power series ring $R[[S, \omega]]$ is a right or left Archimedean domain. As particular cases of our general results we obtain new theorems on the ring of arithmetical functions and the ring of generalized power series. Our results extend and unify many existing results.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16P70 Chain conditions on other classes of submodules, ideals, subrings, etc.; coherence (associative rings and algebras)

Keywords:

skew generalized power series ring; strictly ordered monoid; Archimedean ring

Full Text: DOI
References:

[1] D. D. Anderson, D. F. Anderson, and M. Zafrullah, Factorization in integral domains, J. Pure Appl. Algebra 69 (1990), no. 1, 1-19. · Zbl 0727.13007 · doi:10.1016/0022-4049(90)90074-R

[2] H. Bass, Finitistic dimension and a homological generalization of semi-primary rings, Trans. Amer. Math. Soc. 95 (1960), 466-488. · Zbl 0094.02201 · doi:10.1090/S0002-9947-1960-0157984-8

[3] P. M. Cohn, Free Rings and Their Relations, second edition, London Mathematical Society Monographs, 19, Academic Press, Inc., London, 1985. · Zbl 0659.16001

[4] T. Dumitrescu, S. O. I. Al-Salihi, N. Radu, and T. Shah, Some factorization properties of composite domains A + XB[X] and A + XB[[X]], Comm. Algebra 28 (2000), no. 3, 1125-1139. · Zbl 0963.13017 · doi:10.1080/00927870008826885

[5] G. A. Elliott and P. Ribenboim, Fields of generalized power series, Arch. Math. (Basel) 54 (1990), no. 4, 365-371. · Zbl 0676.13010 · doi:10.1007/BF01189583

[6] D. Frohn, A counterexample concerning ACCP in power series rings, Comm. Algebra 30 (2002), no. 6, 2961-2966. · Zbl 1008.13005 · doi:10.1081/AGB-120004001

[7] D. Frohn, Modules with n-acc and the acc on certain types of annihilators, J. Algebra 256 (2002), no. 2, 467-483. · Zbl 1047.13004 · doi:10.1016/S0021-8693(02)00039-X

[8] D. Jonah, Rings with the minimum condition for principal right ideals have the maximum condition for principal left ideals, Math. Z. 113 (1970), 106-112. · Zbl 0213.04303

[9] T. Y. Lam, A First Course in Noncommutative Rings, Graduate Texts in Mathematics, 131, Springer-Verlag, New York, 1991. · Zbl 0728.16001

[10] Z. Liu, Endomorphism rings of modules of generalized inverse polynomials, Comm. Algebra 28 (2000), no. 2, 803-814. · Zbl 0949.16026 · doi:10.1080/00927870008826861

[11] Z. Liu, The ascending chain condition for principal ideals of rings of generalized power series, Comm. Algebra 32 (2004), no. 9, 3305-3314. · Zbl 1061.16048 · doi:10.1081/AGB-120039398

[12] Z. Liu, Triangular matrix representations of rings of generalized power series, Acta Math. Sin. (Engl. Ser.) 22 (2006), no. 4, 989-998. · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[13] G. Marks, R. Mazurek, and M. Ziembowski, A new class of unique product monoids with applications to ring theory, Semigroup Forum 78 (2009), no. 2, 210-225. · Zbl 1177.16030

[14] G. Marks, R. Mazurek, and M. Ziembowski, A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc. 81 (2010), no. 3, 361-397. · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[15] R. Mazurek, Left principally quasi-Baer and left APP-rings of skew generalized power series, J. Algebra Appl. 14 (2015), no. 3, 1550038, 36 pp. · Zbl 1327.16036 · doi:10.1142/S0219498815500383

[16] R. Mazurek and K. Paykan, Simplicity of skew generalized power series rings, New York J. Math. 23 (2017), 1273-1293. · Zbl 1384.16036

[17] R. Mazurek and M. Ziembowski, On von Neumann regular rings of skew generalized power series, Comm. Algebra 36 (2008), no. 5, 1855-1868. · Zbl 1159.16032 · doi:10.1080/00927870801941150

[18] R. Mazurek and M. Ziembowski, The ascending chain condition for principal left or right ideals of skew generalized power series rings, J. Algebra 322 (2009), no. 4, 983-994. · Zbl 1188.16040 · doi:10.1016/j.jalgebra.2009.03.040

[19] A. Moussavi and K. Paykan, Zero divisor graphs of skew generalized power series rings, Commun. Korean Math. Soc. 30 (2015), no. 4, 363-377. · Zbl 1332.16035 · doi:10.4134/CKMS.2015.30.4.363

[20] A. R. Nasr-Isfahani, The ascending chain condition for principal left ideals of skew polynomial rings, Taiwanese J. Math. 18 (2014), no. 3, 931-941. · Zbl 1357.16043 · doi:10.11650/tjm.18.2014.1663

[21] K. Paykan and A. Moussavi, Baer and quasi-Baer properties of skew generalized power series rings, Comm. Algebra 44 (2016), no. 4, 1615-1635. · Zbl 1346.16042 · doi:10.1080/00927872.2015.1027370

[22] K. Paykan and A. Moussavi, Quasi-Armendariz generalized power series rings, J. Algebra Appl. 15 (2016), no. 5, 1650086, 38 pp. · Zbl 1346.16041 · doi:10.1142/S0219498816500869

[23] K. Paykan and A. Moussavi, Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Comm. Algebra 45 (2017), no. 6, 2306-2324. · Zbl 1395.16048 · doi:10.1080/00927872.2016.1233198

[24] K. Paykan and A. Moussav, Some results on skew generalized power series rings, Taiwanese J. Math. 21 (2017), no. 1, 11-26. · Zbl 1358.13023 · doi:10.11650/tjm.21.2017.7327

[25] K. Paykan and A. Moussav, McCoy property and nilpotent elements of skew generalized power series rings, J. Algebra Appl. 16 (2017), no. 10, 1750183, 33 pp. · Zbl 1383.16037 · doi:10.1142/S0219498817501833

[26] K. Paykan and A. Moussav, Nilpotent elements and nil-Armendariz property of skew generalized power series rings, Asian-Eur. J. Math. 10 (2017), no. 2, 1750034, 28 pp. · Zbl 1383.16029 · doi:10.1142/S1793557117500346

[27] P. Ribenboim, Special properties of generalized power series, J. Algebra 173 (1995), no. 3, 566-586. · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103

[28] P. Ribenboim, Some examples of valued fields, J. Algebra 173 (1995), no. 3, 668-678. · Zbl 0846.12005 · doi:10.1006/jabr.1995.1108

[29] P. Ribenboim, Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra 198 (1997), no. 2, 327-338. · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063

[30] P. B. Sheldon, How changing D[[x]] changes its quotient field, Trans. Amer. Math. Soc. 159 (1971), 223-244. · Zbl 0227.13012

Zahiri, M.; **Moussavi, A.**; **Mohammadi, R.**

Associated primes and primary right ideals of generalized triangular matrix rings. (English)

Zbl 1472.16027

Commun. Algebra 47, No. 4, 1464-1477 (2019).

Summary: Let ${}_sM_R$ be an (S,R)-bimodule of the rings R and S. We determine the associated primes of a formal triangular matrix ring $T=\begin{pmatrix} R & 0\\ M & S\end{pmatrix}$. Indeed, we show that

$$Ass(T_T)=\left\{\begin{pmatrix} Ass((R\oplus M)_R) & 0\\ M & S\end{pmatrix}\right\}\bigcup\left\{\begin{pmatrix} R & 0\\ M & Ass(l_s(M))\end{pmatrix}\right\}.$$

We then obtain necessary and sufficient conditions for the tertiary decomposition theory to exist on a module over an arbitrary ring. Consequently, we classify all the tertiary right ideals of the formal triangular matrix rings.

MSC:

16S50 Endomorphism rings; matrix rings

16D25 Ideals in associative algebras

Cited in **1** Document

Keywords:

associated primes; generalized matrix rings; primary module; tertiary decomposition theory

Full Text: DOI
References:

[1] Annin, S., Associated primes over ore extension rings, Comm. Algebra, 30, 5, 2511-2528 (2002) · Zbl 1010.16025

[2] Birkenmeier, G. F.; Heatherly, H. E.; Kim, J. Y.; Park, J. K., Triangular matrix representations, J. Algebra, 230, 2, 558-595 (2000) · Zbl 0964.16031

[3] Birkenmeier, G. F.; Park, J. K.; Rizvi, S. T., Generalized triangular matrix rings and the fully invariant extending property, Rocky Mt. J. Math, 32, 4, 1299-1319 (2002) · Zbl 1035.16024

[4] Fisher, J. W., Decomposition theories for modules, Trans. Am. Math. Soc, 145, 241-269 (1969) · Zbl 0199.35602

[5] Fisher, J. W., The primary decomposition theory for modules, Pacific J. Math, 35, 2, 359-368 (1970) · Zbl 0204.05802

[6] Goodearl, K. R., Ring Theory, Nonsingular Rings and Modules (1976) · Zbl 0336.16001

[7] Goodearl, K. R., Surjective endomorphisms of finitely generated modules, Comm. Algebra, 15, 3, 589-609 (1987) · Zbl 0612.16020

[8] Goodearl, K. R.; Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (1989), Cambridge University Press · Zbl 0679.16001

[9] Gordon, R., Primary decomposition in right Noetherian rings, Comm. Algebra, 2, 6, 491-524 (1974) · Zbl 0295.16012

[10] Gordon, R., Non-Commutative Ring Theory, Some aspects of non-commutative Noetherian rings, 105-127 (1976), Berlin, Heidelberg, New York: Springer-Verlag, Berlin, Heidelberg, New York · Zbl 0345.16027

[11] Haghany, A.; Varadarajan, K., Study of formal triangular matrix rings, Comm. Algebra, 27, 11, 5507-5525 (1999) · Zbl 0941.16005

[12] Haghany, A.; Varadarajan, K., Study of modules over a formal triangular matrix rings, J. Pure Appl. Algebra, 147, 1, 41-58 (2000) · Zbl 0951.16009

[13] Herstein, I. N., A counterexample in Noetherian rings, Proc. Natl. Acad. Sci. USA, 54, 4, 1036-1037 (1965) · Zbl 0138.26802

[14] Krylov, P. A., Isomorphism of generalized matrix rings, Algebra Logic, 47, 4, 258-262 (2008) · Zbl 1155.16302

[15] Krylov, P. A.; Tuganbaev, A. A., Modules over formal matrix rings, J. Math. Sci, 171, 2, 248-295 (2010) · Zbl 1283.16025

[16] Lam, T. Y., Lectures on Modules and Rings, GTM 189 (1999), Berlin-Heidelberg-New York: Springer Verlag, Berlin-Heidelberg-New York · Zbl 0911.16001

[17] Lesieur, L.; Croisot, R., Sur la decomposition en ideaux primaires dans un anneau non necessairement commutatif, \textit{C. R}, Acad. Sci. Paris, 243, 25, 1988-1991 (1956) · Zbl 0071.26103

[18] Lesieur, L.; Croisot, R., Algebre Noetherienne non-commutative, Mem. Sci. Math, 154 (1963) · Zbl 0115.02903

[19] Matsumura, H., Commutative Ring Theory, Cambridge Studies in Advanced Mathematics No. 8 (1986), Cambridge University Press · Zbl 0603.13001

[20] Müller, M., Rings of quotients of generalised matrix rings, Comm. Algebra, 15, 10, 1991-2015 (1987) · Zbl 0629.16013

[21] Nicholson, W. K.; Watters, J., F., Classes of simple modules and triangular rings, Comm. Algebra, 20, 1, 141-153 (1992) · Zbl 0751.16001

[22] Riley, J. A., Axiomatic primary and tertiary decomposition theory, Trans. Amer. Math. Soc, 105, 2, 177-201 (1962) · Zbl 0131.27402

[23] Stoner, H. H., Lectures on Rings and Module, Vol. 1, On Goldman's primary decomposition, 617-661 (1972), Berlin/New York: Springer-Verlag, Berlin/New York · Zbl 0227.16024

Zahiri, Masoome; **Moussavi, Ahmad**; **Mohammadi, Rasul**
On a skew McCoy ring. (English) Zbl 1478.16016
Commun. Algebra 47, No. 10, 4061-4065 (2019).

The paper under review deals with the study of some new moments in the structure of the so-called skew McCoy rings. In fact, the authors answer in the negative a question posed by *A. R. Nasr-Isfahani* [Commun. Algebra 42, No. 4, 1565–1570 (2014; Zbl 1291.16035)]; see, for instance, Theorems 2.1, 2.6 and 2.7 as well as Example 2.8. The paper is very short but really well written and so it will definitely be of some interest for the investigators of this subject.

Reviewer: Peter Danchev (Sofia)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings

16U80 Generalizations of commutativity (associative rings and algebras)

16U20 Ore rings, multiplicative sets, Ore localization

Cited in **2** Documents

Keywords:

McCoy rings; skew polynomial rings

Full Text: DOI

References:

[1] Başer, M.; Kwak, T. K.; Lee, Y., The McCoy condition on skew polynomial rings, Commun. Algebra, 37, 11, 4026-4037 (2009) · Zbl 1187.16027 · doi:10.1080/00927870802545661

[2] Camillo, V.; Nielsen, P. P., McCoy rings and zero-divisors, J. Pure Appl. Algebra, 212, 3, 599-615 (2008) · Zbl 1162.16021 · doi:10.1016/j.jpaa.2007.06.010

[3] Mccoy, N. H., Remarks on divisors of zero, Am. Math. Monthly, 49, 5, 286-295 (1942) · Zbl 0060.07703 · doi:10.1080/00029890.1942.11991226

[4] Mohammadi, R.; Zahiri, M.; Moussavi, A., On annihilations of ideals in skew monoid rings, J. Korean Math. Soc., 53, 2, 381-401 (2016) · Zbl 1353.16029 · doi:10.4134/JKMS.2016.53.2.381

[5] Nasr-Isfahani, A. R., On semiprime right Goldie McCoy rings, Commun. Algebra, 42, 4, 1565-1570 (2014) · Zbl 1291.16035 · doi:10.1080/00927872.2012.745864

[6] Nielsen, P. P., Semi-commutativity and the McCoy condition, J. Algebra, 298, 1, 134-141 (2006) · Zbl 1110.16036 · doi:10.1016/j.jalgebra.2005.10.008

Paykan, Kamal; Moussavi, Ahmad

Primitivity of skew inverse Laurent series rings and related rings. (English) Zbl 1489.16044

J. Algebra Appl. 18, No. 6, Article ID 1950116, 12 p. (2019).

The paper introduces the notion of (α,δ)-primitivity of a ring R having an α-derivation with respect to an automorphism $\alpha : R \to R$. The main goals of this work is to provide several conditions ensuring that the skew inverse Laurent series ring $R((x^{-1};\alpha,\delta))$ and the skew Laurent power series rings $[[x,x^{-1};\alpha]]$ have a zero Jacobson radical or are primitive, $\bar{\alpha}$-primitive, respectively.

The results may be of the interest for the experts.

Reviewer: Ánh Pham Ngoc (Budapest)

MSC:

16W55 "Super" (or "skew") structure

16S36 Ordinary and skew polynomial rings and semigroup rings

16N60 Prime and semiprime associative rings

16S99 Associative rings and algebras arising under various constructions

Cited in **3** Documents

Keywords:

skew inverse Laurent series ring; skew Laurent power series ring; primitive ring; prime ring

Full Text: DOI

References:

[1] Bell, A. D., When are all prime ideals in an Öre extension Goldie?Comm. Algebra13(8) (1985) 1743-1762. · Zbl 0567.16002

[2] Dzumadildaev, A. S., Derivations and central extensions of the Lie algebra of formal pseudo differential operators, Algebra Anal.6(1) (1994) 140-158. · Zbl 0814.17020

[3] Goodearl, K. R. and Warfield, R. B. Jr., Primitivity in differential operator rings, Math. Z.180 (1982) 503-523. · Zbl 0495.16002

[4] Goodearl, K. R., Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math.13(4) (1983) 573-618. · Zbl 0532.16002

[5] Goodearl, K. R. and Warfield, R. B. Jr., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, Cambridge, 1989). · Zbl 0679.16001

[6] Kaplansky, I., On Rings of Operators (Benjamin, New York, 1965).

[7] Jordan, D. A., Primitive Öre extensions, Glasgow Math. J.18 (1977) 93-97. · Zbl 0347.16020

[8] Jordan, D. A., Primitive skew Laurent polynomial ring, Glasgow Math. J.19 (1978) 79-85. · Zbl 0374.16004

[9] Jordan, D. A., Primitivity in skew Laurent polynomial rings and related rings, Math. Z.213 (1993) 353-371. · Zbl 0797.16037

[10] Lam, T. Y., A First Course in Noncommutative Rings, , Vol. 131 (Springer-Verlag, Berlin, Heidelberg, New York, 1991). · Zbl 0728.16001

[11] Lam, T. Y., Leroy, A. and Matczuk, J., Primeness, semiprimeness and prime radical of Öre extensions, Comm. Algebra25(8) (1997) 2459-2506. · Zbl 0879.16016

[12] Leroy, A. and Matczuk, J., Primitivity of skew polynomial and skew Laurent polynomial rings, Comm. Algebra24(7) (1996) 2271-2284. · Zbl 0863.16020

[13] Letzter, E. S., Primitive ideals in finite extensions of noetherian rings, J. London Math. Soc.39(2) (1989) 427-435. · Zbl 0647.16013

[14] Letzter, E. S. and Wang, L., Notherian skew inverse power series rings, Algebras Represent. Theory13 (2010) 303-314. · Zbl 1217.16038

[15] Nasr-Isfahani, A. R. and Moussavi, A., On a quotient of polynomial rings, Comm. Algebra38(2) (2010) 567-575. · Zbl 1200.16038

[16] Nasr-Isfahani, A. R. and Moussavi, A., Baer and quasi-Baer differential polynomial rings, Comm. Algebra36(9) (2008) 3533-3542. · Zbl 1154.16019

[17] Paykan, K. and Moussavi, A., Special properties of differential inverse power series rings, J. Algebra Appl.15(9) (2016) 1650181 (23 pages). · Zbl 1375.16019

[18] Paykan, K. and Moussavi, A., Study of skew inverse Laurent series rings, J. Algebra Appl.16(11) (2017) 1750221 (33 pages). · Zbl 1392.16041

[19] Paykan, K. and Moussavi, A., Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings, Comm. Algebra45(6) (2017) 2306-2324. · Zbl 1395.16048

[20] Paykan, K., Skew inverse power series rings over a ring with projective socle, Czechoslovak Math. J.67(2) (2017) 389-395. · Zbl 1458.16050

[21] Schur, I., Uber Vertauschbare Lineare Differentialausdrucke, Sitzungsber, Berliner Math. Ges.4 (1905) 2-8. · Zbl 36.0387.01

[22] Tuganbaev, A. A., Jacobson radical of the Laurent series ring, J. Math. Sci.149(2) (2008) 1182-1186. · Zbl 1161.16013

[23] Tuganbaev, D. A., Laurent series rings and pseudo-differential operator rings, J. Math. Sci.128(3) (2005) 2843-2893. · Zbl 1122.16033

[24] Tuganbaev, D. A., Rings of skew-Laurent series and rings of principal ideals, Vestn. MGU, Ser. I. Mat. Mekh.5 (2000) 55-57. · Zbl 0991.16036

Moussavi, Ahmad; Paykan, Kamal

Triangular matrix representation of differential polynomial rings. (English) Zbl 1450.16035

Bol. Soc. Mat. Mex., III. Ser. 25, No. 1, 87-96 (2019).

Summary: Let R be a ring and δ is a derivation of R. In this paper, it is proved that, under suitable conditions, the differential polynomial ring $R[x;\delta]$ has the same triangulating dimension as R. Furthermore, for a piecewise prime ring, we determine a large class of the differential polynomial ring which have a generalized triangular matrix representation for which the diagonal rings are prime.

MSC:

Cited in **1** Document

16W60	Valuations, completions, formal power series and related constructions (associative rings and algebras)
16W70	Filtered associative rings; filtrational and graded techniques
16S36	Ordinary and skew polynomial rings and semigroup rings
16P40	Noetherian rings and modules (associative rings and algebras)

Keywords:

differential polynomial ring; semicentral idempotent; generalized triangular matrix representation; piecewise prime ring; quasi-Baer ring; triangulating dimension

Full Text: DOI
References:

[1] Armendariz, E.P.: A note on extensions of Baer and p.p.-rings. J. Aust. Math. Soc. 18, 470-473 (1974) · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[2] Birkenmeier, G.F.: Idempotents and completely semiprime ideals. Commun. Algebra 11, 567-580 (1983) · Zbl 0505.16004 · doi:10.1080/00927878308822865

[3] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: On quasi-Baer rings. Contemp. Math. 259, 67-92 (2000) · Zbl 0974.16006 · doi:10.1090/conm/259/04088

[4] Birkenmeier, G.F., Heatherly, H.E., Kim, J.Y., Park, J.K.: Triangular matrix representations. J. Algebra 230, 558-595 (2000) · Zbl 0964.16031 · doi:10.1006/jabr.2000.8328

[5] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: Principally quasi-Baer rings. Commun. Algebra 29(2), 639-660 (2001) · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[6] Birkenmeier, G.F., Kim, J.Y., Park, J.K.: Polynomial extensions of Baer and quasi-Baer rings. J. Pure Appl. Algebra 159, 24-42 (2001) · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[7] Birkenmeier, G.F., Park, J.K.: Triangular matrix representations of ring extensions. J. Algebra 265, 457-477 (2003) · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[8] Clark, W.E.: Twisted matrix units semigroup algebras. Duke Math. J. 34, 417-424 (1967) · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[9] Goodearl, K.R., Warfield, R.B.: An Introduction to Noncommutative Noetherian Rings. Cambridge University Press, Cambridge (1989) · Zbl 0679.16001

[10] Gordon, R.: Rings in which minimal left ideals are projective. Pac. J. Math. 31, 679-692 (1969) · Zbl 0188.08402 · doi:10.2140/pjm.1969.31.679

[11] Gordon, R., Small, L.W.: Piecewise domains. J. Algebra 23, 553-564 (1972) · Zbl 0244.16008 · doi:10.1016/0021-8693(72)90121-4

[12] Han, J., Hirano, Y., Kim, H.: Semiprime Öre extensions. Commun. Algebra 28(8), 3795-3801 (2000) · Zbl 0965.16015 · doi:10.1080/00927870008827058

[13] Hashemi, E., Moussavi, A.: Polynomial extensions of quasi-Baer rings. Acta Math. Hung. 107(3), 207-224 (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[14] Hong, C.Y., Kim, N.K., Lee, Y.: Öre extensions of quasi-Baer rings. Commun. Algebra 37(6), 2030-2039 (2009) · Zbl 1177.16016 · doi:10.1080/00927870802304663

[15] Kaplansky, I.: Projections in Banach algebras. Ann. Math. 53, 235-249 (1951) · Zbl 0042.12402 · doi:10.2307/1969540

[16] Kaplansky, I.: Rings of Operators. Benjamin, New York (1965) · Zbl 0174.18503

[17] Lam, T.Y.: A First Course in Noncommutative Rings, Graduate Texts in Math, vol. 131. Springer, Berlin (1991) · Zbl 0728.16001 · doi:10.1007/978-1-4684-0406-7

[18] Liu, Z.K.: Triangular matrix representations of rings of generalized power series. Acta Math. Sin. (Engl. Ser.) 22(4), 989-998 (2006) · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[19] Liu, Z.K., Xiaoyan, Y.: Triangular matrix representaions of skew monoid rings. Math. J. Okayama Univ. 52, 97-109 (2010) · Zbl 1217.16021

[20] Nasr-Isfahani, A.R., Moussavi, A.: Baer and quasi-Baer differential polynomial rings. Commun. Algebra 36, 3533-3542 (2008) · Zbl 1154.16019 · doi:10.1080/00927870802104337

[21] Paykan, K., Moussavi, A.: Special properties of diffreential inverse power series rings. J. Algebra Appl. 15(9), 1650181 (2016) · Zbl 1375.16019 · doi:10.1142/S0219498816501814

[22] Pollingher, P., Zaks, A.: On Baer and quasi-Baer rings. Duke Math. J. 37, 127-138 (1970) · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X

[23] Rickart, C.E.: Banach algebras with an adjoint operation. Ann. Math. 47, 528-550 (1946) · Zbl 0060.27103 · doi:10.2307/1969091

[24] Singh, A.B.: Triangular matrix representation of skew generalized power series rings. Asian Eur. J. Math. 5(4), 1250027 (2012) · Zbl 1268.16038 · doi:10.1142/S1793557112500271

[25] Zhao, R.Y., Liu, Z.K.: Triangular matrix representations of Mal'cev-Neumann rings. South Asian Bull. Math. 33, 1013-1021 (2009) · Zbl 1203.16032

Mousavi, Hamed; Moussavi, Ahmad; Rahimi, Saeed

Skew cyclic codes over $\mathbb{F}_p + v\mathbb{F}_p + v^2\mathbb{F}_p$. (English) Zbl 1406.94093

Bull. Korean Math. Soc. 55, No. 6, 1627-1638 (2018).

Summary: In this paper, we study an special type of cyclic codes called skew cyclic codes over the ring

$\mathbb{F}_p + v\mathbb{F}_p + v^2\mathbb{F}_p$, where p is a prime number. This set of codes are the result of module (or ring) structure of the skew polynomial ring $(\mathbb{F}_p + v\mathbb{F}_p + v^2\mathbb{F}_p)[x;\theta]$ where $v^3 = 1$ and θ is an $\mathbb{F}_p$-automorphism such that $\theta(v) = v^2$. We show that when n is even, these codes are either principal or generated by two elements. The generator and parity check matrix are proposed. Some examples of linear codes with optimum Hamming distance are also provided.

MSC:

94B15 Cyclic codes
11T71 Algebraic coding theory; cryptography (number-theoretic aspects)
68P30 Coding and information theory (compaction, compression, models of communication, encoding schemes, etc.) (aspects in computer science)

Keywords:

skew cyclic coding; skew polynomial rings; Hamming distance; quasi cyclic coding

Full Text: Link

References:

[1] T. Abualrub, A. Ghrayeb, N. Aydin, and I. Siap, On the construction of skew quasicyclic codes, IEEE Trans. Inform. Theory 56 (2010), no. 5, 2081-2090. · Zbl 1366.94632

[2] T. Blackford, Negacyclic codes over Z4of even length, IEEE Trans. Inform. Theory 49 (2003), no. 6, 1417-1424. · Zbl 1063.94101

[3] A. Bonnecaze and P. Udaya, Cyclic codes and self-dual codes over F2+ uF2, IEEE Trans. Inform. Theory 45 (1999), no. 4, 1250-1255. · Zbl 0958.94025

[4] D. Boucher, W. Geiselmann, and F. Ulmer, Skew-cyclic codes, Appl. Algebra Engrg. Comm. Comput. 18 (2007), no. 4, 379-389. · Zbl 1159.94390

[5] D. Boucher, P. Sole, and F. Ulmer, Skew constacyclic codes over Galois rings, Adv. Math. Commun. 2 (2008), no. 3, 273-292. · Zbl 1207.94085

[6] D. Boucher and F. Ulmer, A note on the dual codes of module skew codes, in Cryptography and coding, 230-243, Lecture Notes in Comput. Sci., 7089, Springer, Heidelberg, 2011. · Zbl 1291.94204

[7] A. R. Calderbank and N. J. A. Sloane, Modular and p-adic cyclic codes, Des. Codes Cryptogr. 6 (1995), no. 1, 21-35. · Zbl 0848.94020

[8] P.-L. Cayrel, C. Chabot, and A. Necer, Quasi-cyclic codes as codes over rings of matrices, Finite Fields Appl. 16 (2010), no. 2, 100-115. · Zbl 1193.94072

[9] R. Dastbasteh, H. Mousavi, A. Abualrub, N. Aydin, and J. Haghighat, Skew cyclic codes over Fp+ uFp, International J. Information and Coding Theory, Accepted, 2018. · Zbl 1431.94182

[10] S. T. Dougherty and Y. H. Park, On modular cyclic codes, Finite Fields Appl. 13 (2007), no. 1, 31-57. · Zbl 1130.94333

[11] J. Gao, Skew cyclic codes over Fp+ vFp, J. Appl. Math. Inform. 31 (2013), no. 3-4, 337-342. 1638H. MOUSAVI, A. MOUSSAVI, AND S. RAHIMI · Zbl 1345.94100

[12] L. Jin, Skew cyclic codes over ring Fp+ vFp, J. Electronics (China) 31 (2014), no. 3, 228-231.

[13] D. Mandelbaum, An application of cyclic coding to message identification, IEEE Transactions on Communication Technology 17 (1969), no. 1, 42-48.

[14] P. Kanwar and S. R. Lopez-Permouth, Cyclic codes over the integers modulo pm, Finite Fields Appl. 3 (1997), no. 4, 334-352. · Zbl 1055.94541

[15] V. S. Pless and Z. Qian, Cyclic codes and quadratic residue codes over Z4, IEEE Trans. Inform. Theory 42 (1996), no. 5, 1594-1600. · Zbl 0859.94018

[16] I. Siap, T. Abualrub, N. Aydin, and P. Seneviratne, Skew cyclic codes of arbitrary length, Int. J. Inf. Coding Theory 2 (2011), no. 1, 10-20. · Zbl 1320.94103

[17] K. Tokiwa, M. Kasahara, and T. Namekawa, Burst-error-correction capability of cyclic codes, Electron. Comm. Japan 66 (1983), no. 11, 60-66.

[18] J. Wolfmann, Binary images of cyclic codes over Z4, IEEE Trans. Inform. Theory 47 (2001), no. 5, 1773-1779. · Zbl 1001.94044

[19] http://www.codetables.de. Hamed Mousavi Department of Mathematics Tarbiat Modares University Tehran, Iran Email address: h.moosavi@modares.ac.ir Ahmad Moussavi Department of Mathematics Tarbiat Modares University Tehran, Iran Email address: moussavi.a@gmail.com and moussavi.a@modares.ac.ir Saeed Rahimi Department of Information Technology Emam Hossein University Tehran, Iran Email address: s.rahmi@sharif.edu

Paykan, Kamal; Moussavi, Ahmad
Prime ideals of generalized principally quasi-Baer rings. (English) Zbl 1424.16039
Math. Rep., Buchar. 20(70), No. 4, 349-370 (2018).

A unital ring is a Baer ring if the right annihilator of every non-empty subset is idempotent generated. Here the authors continue their study of various generalizations of Baer rings. For example, R is a (principally) quasi-Baer ring if the right annihilator of every (principal) right ideal is idempotent generated, and generalized (principally) quasi-Baer if for every (principal) right ideal I, there exists a positive integer n such that the right annihilator of I^n is idempotent generated. The authors find equivalent algebraic conditions for R to be (generalized) (principally) quasi-Baer and conditions which imply that the prime radical is the unique minimal prime ideal of R. They also determine properties of certain direct decompositions of R.

Reviewer: Phillip Schultz (Perth)

MSC:

16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16N60 Prime and semiprime associative rings

Cited in **2** Documents

Keywords:

Baer ring; right annihilator; principal right ideal

Mansoub, Arezou Karimi; Moussavi, Ahmad
Idempotent elements and uniquely clean property of skew monoid rings. (English) Zbl 1399.16068
Stud. Sci. Math. Hung. 55, No. 1, 23-40 (2018).

This paper studies whether various ring theoretic properties of a ring R are inherited by a certain construction $R[M,\sigma]$, called in the paper a *skew monoid ring*, where σ is an endomorphism of R and M is a certain monoid. The ring-theoretic properties in question include the structure of idempotents, the property that every finitely generated projective module is free and various versions of cleanness. For example, it is shown that idempotents in $R[M,\sigma]$ are conjugated to idempotents in R. This is used to show, in particular, that $R[M,\sigma]$ inherits from R the property that every finitely generated projective module is free. Similarly, the inheritance of various versions of cleanness is investigated.

Reviewer: Volodymyr Mazorchuk (Uppsala)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N60 Prime and semiprime associative rings
16U80 Generalizations of commutativity (associative rings and algebras)

Keywords:

skew monoid ring; strongly clear ring; endomorphism; free monoid; idempotent

Full Text: DOI

Alsatayhi, S.; Moussavi, A.
(φ,ψ)-derivations of BL-algebras. (English) Zbl 1378.06012
Asian-Eur. J. Math. 11, No. 1, Article ID 1850016, 19 p. (2018).

Summary: In this paper, the notions of derivations of types 1 and 2 on a BL-algebra L are introduced. We extend the notions of these derivations by introducing the notions of (φ,ψ)-derivations of types 1 and 2 and discuss some related properties. The conditions for (φ,ψ)-derivations of types 1 and 2 to be isotone are provided. The set $\mathrm{Fix}_D(L)$ is defined and conditions for $\mathrm{Fix}_D(L)$ to be a down closed set and an ideal on L are given where L is a Boolean algebra and D is a (φ,ψ)-derivation of type 1 on L. Finally, the relationship between φ-derivations of types 1 and 2 for a Boolean algebra L is determined.

MSC:

06D35 MV-algebras
03G25 Other algebras related to logic
03G05 Logical aspects of Boolean algebras

Cited in **1** Document

Keywords:

BL-algebra; Boolean algebra; derivation; ideal

Full Text: DOI

References:

[1] Bell, H. E. and Kappe, L. C., Rings in which derivations satisfy certain algebraic conditions, Acta Math. Hungar.53(3-4) (1989) 339-346. · Zbl 0705.16021

[2] Bell, H. E. and Mason, G., On derivations in near-rings and near-fields, North-Holland Math. Stud.137 (1987) 31-35. · Zbl 0619.16024

[3] Ceven, Y., Symmetric bi-derivations of lattices, Quaest. Math.32 (2009) 241-245. · Zbl 1184.06002

[4] Ceven, Y. and Ozturk, M. A., On \(f\)-derivations of lattices, Bull. Korean Math. Soc.45 (2008) 701-707. · Zbl 1167.06004

[5] Degang, C., Wenxiu, Z., Yeung, D. and Tsang, E. C. C., Rough approximations on a complete distributive lattice with applications to generalized rough sets, Inform. Sci.176 (2006) 1829-1848. · Zbl 1104.03053

[6] Nola, A. Di, Georgescu, G. and Iorgulescu, A., Pseudo BL-algebra: Part I, Mult.-Valued Log.8(5-6) (2002) 673-714. · Zbl 1028.06007

[7] Hajek, P., Metamathematics of fuzzy logic, 4, (Kluwer Academic Publishers, Dordrecht, 1998). · Zbl 0937.03030

[8] Hajek, P. and Montagna, F., A note on first-order Logic of complete BL-chains, Math. Log. Q.54 (2008) 435-446. · Zbl 1152.03019

[9] Honda, A. and Grabisch, M., Entropy of capacities on lattices and set systems, Inform. Sci.176 (2006) 3472-3489. · Zbl 1106.94014

[10] Jun, Y. B. and Xin, X. L., On derivations of BCI-algebras, Inform. Sci.159 (2004) 167-176. · Zbl 1044.06011

[11] Karacal, F., On the direct decomposability of strong negations and S-implication operators on product lattices, Inform. Sci.176 (2006) 3011-3025. · Zbl 1104.03016

[12] Kaya, K., Prime rings with \(\alpha \)-derivations, Bull. Mater. Sci. Eng.16-17 (1987) 63-71. · Zbl 0696.16031

[13] Lele, C. and Nganou, J. B., MV-algebras derived from ideals in BL-algebra, Fuzzy Sets and Systems218 (2013) 103-113. · Zbl 1286.06017

[14] Ozbal, S. A. and Firat, A., Symmetric \(f\)-bi-derivations of lattices, Ars Combin.97 (2010) 471-477. · Zbl 1249.06006

[15] Turunen, E., BL-algebras and basic fuzzy logic, Mathware Soft Comput.6 (1999) 49-61. · Zbl 0962.03020

Zahiri, Masoomeh; Moussavi, Ahmad; Mohammadi, Rasul

On annihilator ideals in skew polynomial rings. (English) Zbl 1403.16025

Bull. Iran. Math. Soc. 43, No. 5, 1017-1036 (2017).

Summary: This article examines annihilators in the skew polynomial ring $R[x;\alpha,\delta]$. A ring is strongly right AB if every non-zero right annihilator is bounded. In this paper, we introduce and investigate a particular class of McCoy rings which satisfy Property (A) and the conditions asked by *P. P. Nielsen* [J. Algebra 298, No. 1, 134–141 (2006; Zbl 1110.16036)]. We assume that R is an (α,δ)-compatible ring, and prove that, if R is nil-reversible then the skew polynomial ring $R[x;\alpha,\delta]$ is strongly right AB. It is also shown that, every right duo ring with an automorphism α is skew McCoy. Moreover, if R is strongly right AB and skew McCoy, then $R[x;\alpha]$ and $R[x;\delta]$ have right Property (A).

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N80 General radicals and associative rings

Cited in **2** Documents

Keywords:

McCoy ring; strongly right AB ring; nil-reversible ring; CN ring; rings with property (A)

Full Text: Link

Nourozi, V.; **Moussavi, A.**; **Ahmadi, M.**
On nilpotent elements of skew Hurwitz polynomial rings. (English) Zbl 1399.16069
Southeast Asian Bull. Math. 41, No. 2, 239-248 (2017).

Summary: We study the structure of the set of nilpotent elements in skew Hurwitz polynomial ring (hR, α), where R is an α-Armendariz ring. We prove that if R is a nil α-Armendariz ring and $\alpha^t = I_R$, then the set of nilpotent elements of R is an α-compatible subring of R. Also, it is shown that if R is an α-Armendariz ring and $\alpha^t = I_R$, then R is nil α-Armendariz. We give some examples of non α-Armendariz rings which are nil α-Armendariz. Moreover, we show that if $\alpha^t = I_R$ for some positive integer t and R is a nil α-Armendariz ring and $\mathrm{nil}\,(hR\,[y;\alpha]) = \mathrm{nil}\,(hR)\,[y]$, then hR is nil α-Armendariz.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N20 Jacobson radical, quasimultiplication

Keywords:

Hurwitz series rings; nil Armendariz rings; Armendariz rings; nilpotent elements; α-rigid rings

Zahiri, Masoome; **Moussavi, Ahmad**; **Mohammadi, Rasul**
On rings with annihilator condition. (English) Zbl 1399.16008
Stud. Sci. Math. Hung. 54, No. 1, 82-96 (2017).

Summary: In this paper we study rings R with the property that every finitely generated ideal of R consisting entirely of zero divisors has a nonzero annihilator. The class of commutative rings with this property is quite large; for example, Noetherian rings, rings whose prime ideals are maximal, the polynomial ring $R[x]$ and rings whose classical ring of quotients are von Neumann regular. We continue to study conditions under which right mininjective rings, right FP-injective rings, right weakly continuous rings, right extending rings, one sided duo rings, semiregular rings and semiperfect rings have this property.

MSC:

16D25 Ideals in associative algebras
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **4** Documents

Keywords:

rings with property (A); strongly right AB ring; local ring; mininjective ring; FP-injective ring; semicentral ring

Full Text: DOI

Mohammadi, Rasul; **Moussavi, Ahmad**; **Zahiri, Masoome**
A note on minimal prime ideals. (English) Zbl 1381.16003
Bull. Korean Math. Soc. 54, No. 4, 1281-1291 (2017).

Summary: Let R be a strongly 2-primal ring and I a proper ideal of R. Then there are only finitely many prime ideals minimal over I if and only if for every prime ideal P minimal over I, the ideal $P/\sqrt{I}$ of $R/\sqrt{I}$ is finitely generated if and only if the ring $R/\sqrt{I}$ satisfies the ACC on right annihilators. This result extends [*D. D. Anderson*, Proc. Am. Math. Soc. 122, No. 1, 13–14 (1994; Zbl 0841.13001)] to large classes of noncommutative rings. It is also shown that, a 2-primal ring R only has finitely many minimal prime ideals if each minimal prime ideal of R is finitely generated. Examples are provided to illustrate our results.

MSC:

16D25 Ideals in associative algebras

16N60 Prime and semiprime associative rings

Cited in **3** Documents

Keywords:
minimal prime ideal; strongly 2-primal ring; duo ring

Full Text: DOI Link

Paykan, Kamal; **Moussavi, Ahmad**

Study of skew inverse Laurent series rings. (English) Zbl 1392.16041

J. Algebra Appl. 16, No. 12, Article ID 1750221, 33 p. (2017).

Summary: In the present note, we continue the study of skew inverse Laurent series ring $R((x^{-1};\alpha,\delta))$ and skew inverse power series ring $R[[x^{-1};\alpha,\delta]]$, where R is a ring equipped with an automorphism α and an α-derivation δ. Necessary and sufficient conditions are obtained for $R[[x^{-1};\alpha,\delta]]$ to satisfy a certain ring property which is among being local, semilocal, semiperfect, semiregular, left quasi-duo, (uniquely) clean, exchange, projective-free and I-ring, respectively. It is shown here that $R((x^{-1};\alpha,\delta))$ (respectively $R[[x^{-1};\alpha,\delta]]$) is a domain satisfying the ascending chain condition (Acc) on principal left (respectively right) ideals if and only if so does R. Also, we investigate the problem when a skew inverse Laurent series ring $R((x^{-1};\alpha,\delta))$ has the same Goldie rank as the ring R and is proved that, if R is a semiprime right Goldie ring, then $R((x^{-1};\alpha,\delta))$ is semiprimitive. Furthermore, we study on the relationship between the simplicity, semiprimeness, quasi-Baerness and Baerness property of a ring R and these of the skew inverse Laurent series ring. Finally, we consider the problem of determining when $f(x)\in R((x^{-1};\alpha,\delta))$ is nilpotent.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

16S99 Associative rings and algebras arising under various constructions

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

16S36 Ordinary and skew polynomial rings and semigroup rings

16U80 Generalizations of commutativity (associative rings and algebras)

Cited in **10** Documents

Keywords:
skew inverse Laurent series ring; skew inverse power series ring; local; semilocal; semiperfect; I-ring; clean; quasi-duo; projective-free ring; ascending chain conditions for principal one-sided ideals; prime radical; serial ring; Goldie rank; semiprimitive; (quasi-)Baer ring; 2-primal; nilpotent element; (weak) zip ring

Full Text: DOI

References:

[1] Alhevaz, A., Moussavi, A. and Habibi, M., On rings having McCoy-like conditions, Comm. Algebra40(4) (2012) 1195-1221. · Zbl 1260.16024

[2] Alhevaz, A. and Kiani, D., Radicals of skew inverse Laurent series rings, Comm. Algebra41(8) (2013) 2884-2902. · Zbl 1279.16037

[3] Amitsur, S. A., Radicals of polynomial rings, Canad. J. Math.8 (1956) 355-361. · Zbl 0072.02404

[4] Anderson, D. D., Anderson, D. F. and Zafrullah, M., Factorization in integral domains, J. Pure Appl. Algebra69 (1990) 1-19. · Zbl 0727.13007

[5] Annin, S., Associated primes over skew polynomial rings, Comm. Algebra30(5) (2002) 2511-2528. · Zbl 1010.16025

[6] Armendariz, E. P., Koo, H. K. and Park, J. K., Isomorphic Öre extensions, Comm. Algebra15 (1987) 2633-2652. · Zbl 0629.16002

[7] Bass, H., Finitistic dimension and a homological generalization of semi-primary rings, Trans. Amer. Math. Soc.95 (1960) 466-488. · Zbl 0094.02201

[8] Beachy, J. A. and Blair, W. D., Rings whose faithful left ideals are cofaithful, Pacific J. Math.58(1) (1975) 1-13. · Zbl 0309.16004

[9] Bedi, S. S. and Ram, J., Jacobson radical of skew polynomial rings and group rings, Israel J. Math.35(4) (1980) 327-338. · Zbl 0436.16002

[10] Beidar, K. I. and Mikhalëv, A. V., Orthogonal completeness and minimal prime ideals, Trudy Sem. Petrovski10 (1984) 227-234. · Zbl 0569.16011

[11] Bell, A. D., When are all prime ideals in an Öre extension Goldie?Comm. Algebra13(8) (1985) 1743-1762. · Zbl 0567.16002

[12] Bell, H. E., Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc.2 (1970) 363-368. · Zbl 0191.02902

[13] Birkenmeier, G. F., Heatherly, H. E. and Lee, E. K., Completely prime ideals and associated radicals, in Proc. Biennial Ohio State-Denison Conference 1992, eds. Jain, S. K. and Rizvi, S. T. (World Scientific, Singapore, 1993), pp. 102-129. · Zbl 0853.16022

[14] Birkenmeier, G. F. and Park, J. K., Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. · Zbl 1054.16018

[15] Camillo, V. and Yu, H.-P., Exchange rings, units, and idempotents, Comm. Algebra22(12) (1994) 4737-4749. · Zbl 0811.16002

[16] Chatters, A. W. and Hajarnavis, C. R., Rings with Chain Conditions (Pitman Advanced Publishing Program, 1980). · Zbl 0446.16001

[17] Clark, W. E., Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-424. · Zbl 0204.04502

[18] Cohn, P. M., Free Rings and Their Relations, 2nd edn. (Academic Press, London, 1985). · Zbl 0659.16001

[19] Cohn, P. M., Some remarks on projective-free rings, Algebra Universalis49 (2003) 159-164. · Zbl 1092.16002

[20] Dumitrescu, T., Al-Salihi, S. O. I., Radu, N. and Shah, T., Some factorization properties of composite domains \(A + X B [X]\) and \(A + X B [[X]]\), Comm. Algebra28(3) (2000) 1125-1139. · Zbl 0963.13017

[21] Dzumadildaev, A. S., Derivations and central extensions of the Lie algebra of formal pseudo differential operators, Algebra Anal.6(1) (1994) 140-158. · Zbl 0814.17020

[22] El Ahmar, A., Sur la Noetherianite des anneaux de polynomes de öre, Comm. Algebra7(18) (1979) 1915-1931 (in French). · Zbl 0427.16001

[23] Evans, E. G., Krull-Schmidt and cancellation over local rings, Pacific J. Math.46 (1973) 115-121. · Zbl 0272.13006

[24] Faith, C. G., Algebra II Ring Theory (Springer-Verlag, New York, 1976). · Zbl 0335.16002

[25] Faith, C. G., Rings with zero intersection property on annihilators: zip rings, Publ. Math.33(2) (1989) 329-338. · Zbl 0702.16015

[26] Fields, D. E., Zero divisors and nilpotent elements in power series rings, Proc. Amer. Math. Soc.27(3) (1971) 427-433. · Zbl 0219.13023

[27] Frohn, D., A counterexample concerning ACCP in power series rings, Comm. Algebra30 (2002) 2961-2966. · Zbl 1008.13005

[28] Frohn, D., Modules with \(n\)-acc and the acc on certain types of annihilators, J. Algebra256 (2002) 467-483. · Zbl 1047.13004

[29] Goodearl, K. R., Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math.13(4) (1983) 573-618. · Zbl 0532.16002

[30] Goodearl, K. R. and Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, 1989). · Zbl 0679.16001

[31] Gordon, R. and Robson, J. C., Krull dimension, Mem. Amer. Math. Soc.133 (1973) 1-78. · Zbl 0269.16017

[32] Grzeszczuk, P., Goldie dimension of differential operator rings, Comm. Algebra16(4) (1988) 689-701. · Zbl 0654.16002

[33] Habibi, M., Moussavi, A. and Manaviyat, R., On skew quasi-Baer Rings, Comm. Algebra38(10) (2010) 3637-3648. · Zbl 1213.16016

[34] Han, J., Hirano, Y. and Kim, H., Semiprime Öre extensions, Comm. Algebra28(8) (2000) 3795-3801. · Zbl 0965.16015

[35] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[36] Heinzer, W. and Lantz, D., ACCP in polynomial rings: A counterexample, Proc. Amer. Math. Soc.121 (1994) 975-977. · Zbl 0828.13013

[37] Hirano, Y., On ordered monoid rings over a quasi-Baer ring, Comm. Algebra29 (2001) 2089-2095. · Zbl 0996.16020

[38] Herstain, I. N. and Small, L. W., Nil rings satisfying certain chain conditions, Canad. J. Math.16 (1964) 771-776. · Zbl 0129.02004

[39] Hong, C. Y., Kim, N. K., Kwak, T. K. and Lee, Y., Extensions of zip rings, J. Pure Appl. Algebra195(3) (2005) 231-242. · Zbl 1071.16020

[40] Hwang, S. U., Jeon, Y. C. and Lee, Y., Structure and topological conditions of NI rings, J. Algebra302 (2006) 186-199. · Zbl 1104.16015

[41] Jonah, D., Rings with the minimum condition for principal right ideals have the maximum condition for principal left ideals, Math. Z.113 (1970) 106-112. · Zbl 0213.04303

[42] Jordan, C. R. and Jordan, D. A., A note on semiprimitivity of Öre extensions, Comm. Algebra4 (1976) 647-656. · Zbl 0328.16001

[43] Jordan, D. A., Simple skew Laurent polynomial rings, Comm. Algebra12(2) (1984) 135-137. · Zbl 0534.16001

[44] Kaplansky, I., Rings of Operators (BenjaminNew York, 1965). · Zbl 0174.18503

[45] Krempa, J., Radicals and derivations of algebras, in Proc. Eger Conf. (North-Holland, 1982). · Zbl 0586.17002

[46] Krempa, J., Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[47] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, 1991). · Zbl 0728.16001

[48] Lam, T. Y., Leroy, A. and Matczuk, J., Primeness, semiprimeness and prime radical of Öre extensions, Comm. Algebra25(8) (1997) 2459-2506. · Zbl 0879.16016

[49] Lam, T. Y., Lectures on Modules and Rings, , Vol. 189 (Springer, New York, 1999). · Zbl 0911.16001

[50] Lam, T. Y. and Dugas, A. S., Quasi-duo rings and stable range descent, J. Pure Appl. Algebra195 (2005) 243-259. · Zbl 1071.16003

[51] Lambek, J., On the representation of modules by sheaves of factor modules, Canad. Math. Bull.14 (1971) 359-368. · Zbl 0217.34005

[52] Lanski, C., Nil subrings of Goldie rings are nilpotent, Canad. J. Math.21 (1969) 904-907. · Zbl 0182.36701

[53] Lee, Y., Huh, C. and Kim, H. K., Questions on 2-primal rings, Comm. Algebra26(2) (1998) 595-600. · Zbl 0901.16009

[54] Lenagan, T. H., Nil ideals in rings with finite Krull dimension, J. Algebra29 (1974) 77-87. · Zbl 0277.16014

[55] Leroy, A., Matczuk, J., Goldie conditions for Öre extensions over semiprime rings, Algebras and Representation Theory8 (2005) 679-688. · Zbl 1090.16011

[56] Leroy, A., Matczuk, J. and Puczylowski, E. R., Quasi-duo skew polynomial rings, J. Pure Appl. Algebra212 (2008) 1951-1959. · Zbl 1143.16024

[57] Letzter, E. S. and Wang, L., Noetherian skew inverse power series rings, Algebr. Represent. Theory13 (2010) 303-314. · Zbl 1217.16038

[58] Letzter, E. S. and Wang, L., Goldie ranks of skew power series rings of automorphic type, Comm. Algebra40(6) (2012) 1911-1917. · Zbl 1283.16038

[59] Manaviyat, R. and Moussavi, A., On annihilator ideals of pseudo-differential operator rings, Algebra Colloq.4(22) (2015) 607-620. · Zbl 1387.16018

[60] Marks, G., On 2-primal Öre extensions, Comm. Algebra29 (2001) 2113-2123. · Zbl 1005.16027

[61] Matczuk, J., Goldie rank of Öre extensions, Comm. Algebra23 (1995) 1455-1471. · Zbl 0828.16032

[62] Mazurek, R. and Ziembowski, M., The ascending chain condition for principal left or right ideals of skew generalized power series rings, J. Algebra322 (2009) 983-994. · Zbl 1188.16040

[63] Mcconnell, J. C. and Robson, J. C., Non-commutative Noetherian Rings (John Wiley Sons, Chichester, 1987). · Zbl 0644.16008

[64] Montgomery, M. S., Von Neumann finiteness of tensor products of algebras, Comm. Algebra11(6) (1983) 595-610. · Zbl 0488.16015

[65] Moussavi, A. and Hashemi, E., On the semiprimitivity of skew polynomial rings, Mediterr. J. Math.4 (2007) 375-381. · Zbl 1142.16015

[66] Nasr-Isfahani, A. R., The ascending chain condition for principal left ideals of skew polynomial rings, Taiwanese J. Math.3(18) (2014) 931-941. · Zbl 1357.16043

[67] Nicholson, W. K., \(I\)-rings, Trans. Amer. Math. Soc.207 (1975) 361-373. · Zbl 0305.16010

[68] Nicholson, W. K., Lifting idempotents and exchange rings, Trans. Amer. Math. Soc.229 (1977) 269-278. · Zbl 0352.16006

[69] Nicholson, W. K. and Zhou, Y., Rings in which elements are uniquely the sum of an idempotent and a unit, Glasg. Math. J.46 (2004) 227-236. · Zbl 1057.16007

[70] Nicholson, W. K., Semiregular modules and rings, Canad. J. Math.XXXIII(5) (1976) 1105-1120. · Zbl 0317.16005

[71] Ouyang, L., Öre extensions of weak zip rings, Glasg. Math. J.51(3) (2009) 525-537. · Zbl 1186.16017

[72] Ouyang, L. and Chen, Y., On weak symmetric rings, Comm. Algebra38(2) (2010) 697-713. · Zbl 1197.16033

[73] Paykan, K. and Moussavi, A., Special properties of diffrential inverse power series rings, J. Algebra Appl.15(9) (2016) 1650181, 23pp. · Zbl 1375.16019

[74] Pollingher, A., Zaks, A., On Baer and quasi-Baer rings, Duke Math. J.37 (1970) 127-138. · Zbl 0219.16010

[75] Puninski, G., Serial Rings (Kluwer Academic Publishers, 2001). · Zbl 1032.16001

[76] Rowen, L. H., Ring Theory I (Academic Press, New York, 1988). · Zbl 0651.16001

[77] Shock, R. C., Polynomial rings over finite dimension rings, Pacific J. Math.42 (1972) 251-257. · Zbl 0213.04301

[78] Schur, I., Uber vertauschbare lineare differentialausdrucke, sitzungsber, Berliner Math. Ges.4 (1905) 2-8. · Zbl 36.0387.01

[79] Tuganbaev, D. A., Rings of skew-Laurent series and rings of principal ideals, Vestn. MGU Ser. I. Mat. Mekh.5 (2000) 55-57. · Zbl 0991.16036

[80] Tuganbaev, D. A., Rings Close to Regular (Kluwer Academic, Dordrecht, 2002). · Zbl 1120.16012

[81] Tuganbaev, D. A., Laurent series rings and pseudo-differential operator rings, J. Math. Sci.128(3) (2005) 2843-2893. · Zbl 1122.16033

[82] Tuganbaev, D. A., Jacobson radical of the Laurent series ring, J. Math. Sci.149(2) (2008) 1182-1186. · Zbl 1161.16013

[83] Vámos, P., 2-good rings, Q. J. Math.56(3) (2005) 417-430. · Zbl 1156.16303

[84] Wang, Y. and Ren, Y., 2-good rings and their extensions, Bull. Korean Math. Soc.50(5) (2013) 1711-1723. · Zbl 1293.16028

[85] Warfield, R. B., Exchange rings and decompositions of modules, Math. Ann.199 (1972) 31-36. · Zbl 0228.16012

[86] Warfield, R. B., Serial rings and finitely presented modules, J. Algebra37 (1975) 187-222. · Zbl 0319.16025

[87] Warfield, R. B., Prime ideals in ring extensions, J. Lond. Math. Soc. (2)28 (1983) 453-460. · Zbl 0532.16011

[88] Yu, H.-P., On quasi-duo rings, Glasg. Math. J.37 (1995) 21-31. · Zbl 0819.16001

[89] Zelmanowitz, J. M., The finite intersection property on annihilator right ideals, Proc. Amer. Math. Soc.57(2) (1976) 213-216. · Zbl 0333.16014

Paykan, Kamal; **Moussavi, Ahmad**

McCoy property and nilpotent elements of skew generalized power series rings. (English)

Zbl 1383.16037

J. Algebra Appl. 16, No. 10, Article ID 1750183, 33 p. (2017).

Summary: Let R be a ring, $(S,\leq)$ a strictly ordered monoid and $\omega : S \to \mathrm{End}(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S,\omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. In this paper, we consider the problem of determining when $f \in R[[S,\omega]]$ is nilpotent in $R[[S,\omega]]$. We study various annihilator properties and a variety of conditions and related properties that the skew generalized power series $R[[S,\omega]]$ inherits from R. We also introduce and study the (S,ω)-McCoy condition on R, a generalization of the standard McCoy condition from polynomials to skew generalized power series. We resolve the structure of (S,ω)-McCoy rings and obtain various necessary or sufficient conditions for a ring to be (S,ω)-McCoy. As particular cases of our general results we obtain several new theorems on the McCoy condition. Moreover various examples of (S,ω)-McCoy rings are provided.

MSC:

16U80 Generalizations of commutativity (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **6** Documents

Keywords:

skew generalized power series ring; (S,ω)-McCoy ring; (S,ω)-Armendariz ring; (weak) zip ring; semicommutative ring; skew triangular matrix ring

Full Text: DOI

References:

[1] Armendariz, E. P., A note on extensions of Baer and p.p.-rings, J. Austral. Math. Soc.18 (1974) 470-473. · Zbl 0292.16009

[2] Başer, M., Kwak, T. K. and Lee, Y., The McCoy condition on skew polynomial rings, Comm. Algebra37(11) (2009) 4026-4037. · Zbl 1187.16027

[3] Beachy, J. A. and Blair, W. D., Rings whose faithful left ideals are cofaithful, Pacific J. Math.58(1) (1975) 1-13. · Zbl 0309.16004

[4] Bell, H. E., Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc.2 (1970) 363-368. · Zbl 0191.02902

[5] Birkenmeier, G. F. and Park, J. K., Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. · Zbl 1054.16018

[6] Camillo, V. and Nielsen, P. P., McCoy rings and zero-divisors, J. Pure Appl. Algebra212(3) (2008) 599-615. · Zbl 1162.16021

[7] Cedó, F., Zip rings and Mal'cev domains, Comm. Algebra19(7) (1991) 1983-1991. · Zbl 0733.16007

[8] Chatters, A. W. and Hajarnavis, C. R., Rings with Chain Conditions (Pitman Advanced Publishing Program, 1980). · Zbl 0446.16001

[9] Chen, J., Yang, X. and Zhou, Y., On strongly clean matrix and triangular matrix rings, Comm. Algebra34 (2006) 3659-3674. · Zbl 1114.16024

[10] Cohn, P. M., Free Rings and Their Relations, 2nd edn. (Academic Press, London, 1985). · Zbl 0659.16001

[11] Elliott, G. A. and Ribenboim, P., Fields of generalized power series, Arch. Math.54 (1990) 365-371. · Zbl 0676.13010

[12] Faith, C., Rings with zero intersection property on annihilators: Zip rings, Publ. Math.33(2) (1989) 329-338. · Zbl 0702.16015

[13] Faith, C., Annihilator ideals, associated primes and Kasch-McCoy commutative rings, Comm. Algebra19(7) (1991) 1867-1892.

· Zbl 0729.16015

[14] Farbman, S. P., The unique product property of groups and their amalgamated free products, J. Algebra178(3) (1995) 962-990. · Zbl 0847.20021

[15] Fields, D. E., Zero divisors and nilpotent elements in power series rings, Proc. Amer. Math. Soc.27(3) (1971) 427-433. · Zbl 0219.13023

[16] Gilmer, R., Grams, A. and Parker, T., Zero divisors in power series rings, J. Reine Angew. Math.278/279 (1975) 145-164. · Zbl 0309.13009

[17] Goodearl, K. R., Von Neumann Regular Rings (Pitman, London, 1979). · Zbl 0411.16007

[18] Goodearl, K. R. and Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, 1989). · Zbl 0679.16001

[19] Habibi, M., Moussavi, A. and Alhevaz, A., The McCoy condition on Ore extensions, Comm. Algebra41(1) (2013) 124-141. · Zbl 1269.16019

[20] Hashemi, E., McCoy rings relative to a monoid, Comm. Algebra38(3) (2010) 1075-1083. · Zbl 1207.16041

[21] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[22] Herstein, I. N. and Small, L. W., Nil rings satisfying certain chain conditions, Canad. J. Math.16 (1964) 771-776. · Zbl 0129.02004

[23] Hirano, Y., On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra168 (2002) 45-52. · Zbl 1007.16020

[24] Hong, C. Y., Kim, N. K., Kwak, T. K. and Lee, Y., Extensions of zip rings, J. Pure Appl. Algebra195(3) (2005) 231-242. · Zbl 1071.16020

[25] Hong, C. Y., Kim, N. K. and Lee, Y., Extensions of McCoy's theorem, Glasg. Math. J.52(1) (2010) 155-159. · Zbl 1195.16026

[26] Hwang, S. U., Jeon, Y. C. and Lee, Y., Structure and topological conditions of NI rings, J. Algebra302 (2006) 186-199. · Zbl 1104.16015

[27] Kim, N. K. and Lee, Y., Extensions of reversible rings, J. Pure Appl. Algebra185 (2003) 207-223. · Zbl 1040.16021

[28] Koşan, M. T., Extensions of rings having McCoy condition, Canad. Math. Bull.52(2) (2009) 267-272. · Zbl 1189.16031

[29] Krempa, J., Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[30] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, 1991). · Zbl 0728.16001

[31] Lambek, J., On the representation of modules by sheaves of factor modules, Canad. Math. Bull.14 (1971) 359-368. · Zbl 0217.34005

[32] Lanski, C., Nil subrings of Goldie rings are nilpotent, Canad. J. Math.21 (1969) 904-907. · Zbl 0182.36701

[33] Lee, T. K. and Zhou, Y., Armendariz and reduced rings, Comm. Algebra32(6) (2004) 2287-2299. · Zbl 1068.16037

[34] Lei, Z., Chen, J. L. and Ying, Z. L., A question on McCoy rings, Bull. Austral. Math. Soc.76 (2007) 137-141. · Zbl 1127.16027

[35] Lenagan, T. H., Nil ideals in rings with finite Krull dimension, J. Algebra29 (1974) 77-87. · Zbl 0277.16014

[36] Liu, Z. K., Endomorphism rings of modules of generalized inverse polynomials, Comm. Algebra28(2) (2000) 803-814. · Zbl 0949.16026

[37] Liu, Z. K., Triangular matrix representations of rings of generalized power series, Acta Math. Sinica (English Series)22 (2006) 989-998. · Zbl 1102.16027

[38] Marks, G., On \(2\)-primal Öre extensions, Comm. Algebra29 (2001) 2113-2123. · Zbl 1005.16027

[39] Marks, G., Mazurek, R. and Ziembowski, M., A new class of unique product monoids with applications to ring theory, Semigroup Forum78(2) (2009) 210-225. · Zbl 1177.16030

[40] Marks, G., Mazurek, R. and Ziembowski, M., A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc.81 (2010) 361-397. · Zbl 1198.16025

[41] Mazurek, R., Left principally quasi-Baer and left APP-rings of skew generalized power series, J. Algebra Appl.14(3) (2015), Article ID: 1550038, 36 pp. · Zbl 1327.16036

[42] Mazurek, R. and Ziembowski, M., On von Neumann regular rings of skew generalized power series, Comm. Algebra36(5) (2008) 1855-1868. · Zbl 1159.16032

[43] Mazurek, R. and Ziembowski, M., Duo, Bézout and distributive rings of skew power series, Publ. Mat.53(2) (2009) 257-271. · Zbl 1176.16034

[44] McCoy, N. H., Remarks on divisors of zero, Amer. Math. Monthly49 (1942) 286-295. · Zbl 0060.07703

[45] McCoy, N. H., Annihilators in polynomial rings, Amer. Math. Monthly64 (1957) 28-29. · Zbl 0077.25903

[46] Nielsen, P. P., Semi-commutativity and the McCoy condition, J. Algebra298 (2006) 134-141. · Zbl 1110.16036

[47] Ouyang, L., Öre extensions of weak zip rings, Glasg. Math. J.51(3) (2009) 525-537. · Zbl 1186.16017

[48] Ouyang, L., Special weak properties of generalized power series, J. Korean Math. Soc.49(4) (2012) 687-701. · Zbl 1252.16041

[49] Ouyang, L. and Chen, Y., On weak symmetric rings, Comm. Algebra38(2) (2010) 697-713. · Zbl 1197.16033

[50] Paykan, K. and Moussavi, A., Nilpotent elements and nil-Armendariz property of skew generalized power series rings, Asian-Eur. J. Math.10(1) (2017), 1750034, 28pp. · Zbl 1383.16029

[51] Paykan, K., Moussavi, A. and Zahiri, M., Special properties of rings of skew generalized power series, Comm. Algebra42(12) (2014) 5224-5248. · Zbl 1297.16045

[52] Rege, M. B. and Chhawchharia, S., Armendariz rings, Proc. Japan Acad. Ser. A Math. Sci.73 (1997) 14-17. · Zbl 0960.16038

[53] Ribenboim, P., Rings of generalized power series: Nilpotent elements, Abh. Math. Sem. Univ. Hamburg61 (1991) 15-33. · Zbl 0751.13005

[54] Ribenboim, P., Special properties of generalized power series, J. Algebra173 (1995) 566-586. · Zbl 0852.13008

[55] Ribenboim, P., Some examples of valued fields, J. Algebra173 (1995) 668-678. · Zbl 0846.12005

[56] Ribenboim, P., Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra198 (1997) 327-338. · Zbl 0890.16004

[57] Rowen, L. H., Ring theory I (Academic Press, New York, 1988). · Zbl 0651.16001

[58] Tuganbaev, A. A., Some ring and module properties of skew Laurent series, in Formal Power Series and Algebraic Combinatorics (Springer, Berlin, 2000), pp. 613-622. · Zbl 0997.16033

[59] Weiner, L., Concerning a theorem of McCoy, Amer. Math. Monthly59 (1952) 336-337.

[60] Yang, S., Song, X. and Liu, Z., Power-serieswise McCoy rings, Algebra Colloq.18(2) (2011) 301-310. · Zbl 1220.16031

[61] Ying, Z., Chen, J. and Lei, Z., Extensions of McCoy rings, Northeast. Math. J.24(1) (2008) 85-94. · Zbl 1163.16021

[62] Zelmanowitz, J. M., The finite intersection property on annihilator right ideals, Proc. Amer. Math. Soc.57(2) (1976) 213-216. · Zbl 0333.16014

[63] Zhou, Y. S. and Mei, S. X., Extensions of McCoy rings relative to a monoid, J. Math. Res. Exposition28(3) (2008) 659-665. · Zbl 1199.16049

Paykan, Kamal; Moussavi, Ahmad

The McCoy condition on skew monoid rings. (English) Zbl 1383.16030

Asian-Eur. J. Math. 10, No. 3, Article ID 1750050, 29 p. (2017).

Summary: Let R be an associative ring with identity, S a monoid and $\omega : S \to \mathrm{End}(R)$ a monoid homomorphism. When S is a u.p.-monoid and R is a reversible S-compatible ring, then we observe that R satisfies a McCoy-type property, in the context of skew monoid ring $R*S$. We introduce and study the (S,ω)-McCoy condition on R, a generalization of the standard McCoy condition from polynomial rings to skew monoid rings. Several examples of reversible S-compatible rings and also various examples of (S,ω)-McCoy rings are provided. As an application of (S,ω)-McCoy rings, we investigate the interplay between the ring-theoretical properties of a general skew monoid ring $R*S$ and the graph-theoretical properties of its zero-divisor graph $\bar{\Gamma}(R*S)$.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings

16U80 Generalizations of commutativity (associative rings and algebras)

16N40 Nil and nilpotent radicals, sets, ideals, associative rings

05C12 Distance in graphs

Cited in **1** Document

Keywords:

skew monoid ring; McCoy ring; reversible ring; skew polynomial ring; u.p.-monoid; skew triangular matrix; uniserial ring; zero-divisor graph; diameter; girth

Full Text: DOI

References:

[1] Afkhami, M., Khashyarmanesh, K. and Khorsandi, M. R., Zero-divisor graphs of Ore extension rings, J. Algebra Appl.10(6) (2011) 1309-1317. · Zbl 1237.16026

[2] Akbari, S. and Mohammadian, A., Zero-divisor graphs of non-commutative rings, J. Algebra296(2) (2006) 462-479. · Zbl 1113.16038

[3] Alhevaz, A. and Kiani, D., McCoy property of Skew Laurent polynomial and power series rings, J. Algebra Appl.13(2) (2014) 23. · Zbl 1295.16026

[4] Anderson, D. D. and Naseer, M., Becks coloring of a commutative ring, J. Algebra159 (1993) 500-514. · Zbl 0798.05067

[5] Anderson, D. F. and Livingston, P. S., The zero-divisor graph of a commutative ring, J. Algebra217 (1999) 434-447. · Zbl 0941.05062

[6] Anderson, D. F. and Mulay, S. B., On the diameter and girth of a zero-divisor graph, J. Pure Appl. Algebra210 (2007) 543-550. · Zbl 1119.13005

[7] Axtell, M., Coykendall, J. and Stickles, J., Zero-divisor graphs of polynomials and power series over commutative rings, Comm. Algebra33 (2005) 2043-2050. · Zbl 1088.13006

[8] Başer, M., Kwak, T. K. and Lee, Y., The McCoy condition on skew polynomial rings, Comm. Algebra37(11) (2009) 4026-4037. · Zbl 1187.16027

[9] Beck, I., Coloring of commutative rings, J. Algebra116 (1988) 208-226. · Zbl 0654.13001

[10] Bell, H. E., Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc.2 (1970) 363-368. · Zbl 0191.02902

[11] Bergman, G. M. and Issacs, I. M., Rings with fixed-point-free group actions, Proc. London Math. Soc.27 (1973) 69-87. · Zbl 0234.16005

[12] Birkenmeier, G. F. and Park, J. K., Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. · Zbl 1054.16018

[13] Camillo, V. and Nielsen, P. P., McCoy rings and zero-divisors, J. Pure Appl. Algebra212 (2008) 599-615. · Zbl 1162.16021

[14] Chen, J., Yang, X. and Zhou, Y., On strongly clean matrix and triangular matrix rings, Comm. Algebra34 (2006) 3659-3674. · Zbl 1114.16024

[15] Cohn, P. M., A Morita context related to finite automorphism groups of rings, Pacific J. Math.98(1) (1982) 37-54. · Zbl 0488.16024

[16] Cohn, P. M., Reversible rings, Bull. London Math. Soc.31(6)(1999) 641-648. · Zbl 1021.16019

[17] Du, X. N., On semicommutative rings and strongly regular rings, J. Math. Res. Exp.14(1) (1994) 57-60. · Zbl 0830.16012

[18] Farbman, S. P., The unique product property of groups and their amalgamated free products, J. Algebra178(3) (1995) 962-990. · Zbl 0847.20021

[19] Fisher, J. W. and Montgomery, S., Semiprime skew group rings, J. Algebra52(1) (1978) 241-247. · Zbl 0373.16004

[20] Goodearl, K. R., Von Neumann Regular Rings (Pitman, London, 1979). · Zbl 0411.16007

[21] Goodearl, K. R. and Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, 1989). · Zbl 0679.16001

[22] Habeb, J. M., A note on zero commutative and duo rings, Math. J. Okayama Univ.32 (1990) 73-76. · Zbl 0758.16007

[23] Habibi, M., Moussavi, A. and Mokhtari, S., On skew Armendariz of Laurent series type rings, Comm. Algebra40(11) (2012) 3999-4018. · Zbl 1276.16039

[24] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[25] Hashemi, E., McCoy rings relative to a monoid, Comm. Algebra38(3) (2010) 1075-1083. · Zbl 1207.16041

[26] Hirano, Y., On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra168 (2002) 45-52. · Zbl 1007.16020

[27] Huh, C., Lee, Y. and Smoktunowicz, A., Armendariz rings and semicommutative rings, Comm. Algebra30(2) (2002) 751-761. · Zbl 1023.16005

[28] Jordan, D. A., Bijective extensions of injective ring endomorphisms, J. Lond. Math. Soc.25(2) (1982) 435-448. · Zbl 0486.16002

[29] Kaplansky, I., Commutative Rings, Rev. edn. (University of Chicago Press, Chicago, 1974). · Zbl 0203.34601

[30] Krempa, J., Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[31] Lee, T. K. and Zhou, Y., Armendariz and reduced rings, Comm. Algebra32(6) (2004) 2287-2299. · Zbl 1068.16037

[32] Lucas, T., The diameter of a zero divisor graph, J. Algebra301 (2006) 174-193. · Zbl 1109.13006

[33] Marks, G., A taxonomy of 2-primal rings, J. Algebra266(2) (2003) 494-520. · Zbl 1045.16001

[34] Marks, G., Mazurek, R. and Ziembowski, M., A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc.81 (2010) 361-397. · Zbl 1198.16025

[35] Mason, G., Reflexive ideals, Comm. Algebra9(17) (1981) 1709-1724. · Zbl 0468.16024

[36] McCoy, N. H., Remarks on divisors of zero, Amer. Math. Monthly49 (1942) 286-295. · Zbl 0060.07703

[37] McCoy, N. H., Annihilators in polynomial rings, Amer. Math. Monthly64 (1957) 28-29. · Zbl 0077.25903

[38] Montgomery, S., Outer automorphisms of semiprime rings, J. London Math. Soc.18(2) (1978) 209-220. · Zbl 0394.16025

[39] Nielsen, P. P., Semi-commutativity and the McCoy condition, J. Algebra298 (2006) 134-141. · Zbl 1110.16036

[40] Okninski, J., Semigroup Algebras (Marcel Dekker, 1991). · Zbl 0725.16001

[41] Passman, D. S., The Algebraic Structure of Group Rings (Wiley, 1977). · Zbl 0368.16003

[42] Paykan, K., Moussavi, A. and Zahiri, M., Special properties of rings of skew generalized power series, Comm. Algebra42(12) (2014) 5224-5248. · Zbl 1297.16045

[43] Ribenboim, P., Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra198 (1997) 327-338. · Zbl 0890.16004

[44] Redmond, S. P., The zero-divisor graph of a non-commutative ring, Int. J. Commut. Rings1 (2002) 203-211. · Zbl 1195.16038

[45] Redmond, S. P., Structure in the zero-divisor graph of a non-commutative ring, Houston J. Math.30(2) (2004) 345-355. · Zbl 1064.16033

[46] Tuganbaev, A. A., Rings Close to Regular, (Kluwer Academic Publishers, 2002). · Zbl 1120.16012

[47] Tuganbaev, A. A., Semidistributive Modules and Rings, , Vol. 449 (Kluwer Academic Publishers, 1998). · Zbl 0909.16001

[48] Weiner, L., Concerning a theorem of McCoy, Amer. Math. Monthly59 (1952) 336-337.

[49] Wright, S. E., Lengths of paths and cycles in zero-divisor graphs and digraphs of semigroups, Comm. Algebra35 (2007) 1987-1991. · Zbl 1183.13009

[50] Ying, Z., Chen, J. and Lei, Z., Extensions of McCoy rings, Northeast. Math. J.24(1) (2008) 85-94. · Zbl 1163.16021

Azimi, Masoud; Moussavi, Ahmad

On nilpotent elements of Ore extensions. (English) Zbl 1383.16034

Asian-Eur. J. Math. 10, No. 3, Article ID 1750043, 15 p. (2017).

Summary: Let R be an associative ring with unity, α be an endomorphism of R and δ an α-derivation of R. We introduce the notion of α-nilpotent p.p.-rings, and prove that the α-nilpotent p.p.-condition extends to various ring extensions. Among other results, we show that, when R is a nil-α-compatible and 2-primal ring with $\mathrm{Nil}(R)$ nilpotent, then $\mathrm{Nil}(R[x;\alpha,\delta]) = \mathrm{Nil}(R)[x;\alpha,\delta]$; and when R is a nil Armendriz ring of skew power series type with $\mathrm{Nil}(R)$ nilpotent, then $\mathrm{Nil}(R[[x;\alpha]]) = \mathrm{Nil}(R)[[x;\alpha]]$, where Nil(R) is the set of nilpotent elements of R. These results extend existing results to a more general setting.

MSC:

16U20	Ore rings, multiplicative sets, Ore localization	Cited in **1** Document
16S36	Ordinary and skew polynomial rings and semigroup rings	
16W60	Valuations, completions, formal power series and related constructions (associative rings and algebras)	

Keywords:

nilpotent elements; α-nilpotent p.p.-ring; nil-(α,δ)-compatible ring

Full Text: DOI

References:

[1] Amitsur, A., Algebras over infinite fileds, Proc. Amer. Math. Soc.7 (1956) 35-48. · Zbl 0070.03004

[2] Anderson, D. D. and Camillo, V., Armendariz rings and Gaussian rings, Comm. Algebra7 (1998) 2265-2272. · Zbl 0915.13001

[3] Antoine, R., Nilpotent elements and Armendariz rings, J. Algebra319 (2008) 3128-3140. · Zbl 1157.16007

[4] Armendariz, E. P., A note on extensions of Baer and p.p.-rings, J. Austral. Math. Soc.18 (1974) 470-473. · Zbl 0292.16009

[5] M. Azimi and A. Moussavi, Nilpotent elements in skew polynomial rings, preprint. · Zbl 1383.16034

[6] Bell, H. E., Near-rings in which each element is a power of itself, Bull. Austral. Math. Soc.2 (1970) 363-368. · Zbl 0191.02902

[7] Chen, W., On Nil-semicommutative ings, Thai J. Math.9 (2011) 39-47. · Zbl 1264.16040

[8] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[9] Herstin, I. N. and Small, L. W., Nil rings satisfying certain chain conditions, Canad. J. Math.16 (1964) 771-776. · Zbl 0129.02004

[10] Hizem, S., A note on nil power serieswise Armendariz rings, Rend. Cir. Mat. Palermo59 (2010) 87-99. · Zbl 1206.16044

[11] Huh, C., Kim, C. O., Kim, E. J., Kim, H. K. and Lee, Y., Nil radicals of power series rings, J. Korian Math. Soc.42 (2005) 1003-1015. · Zbl 1086.16010

[12] Huh, C. and Lee, C. Ik, On \(\pi \)-Armendariz rings, Bull. Korean Math. Soc.44 (2007) 641-649. · Zbl 1159.16023

[13] Habibi, M. and Moussavi, A., On nil skew Armendariz rings, Asian-European J. Math.1 (2010) 1-16. · Zbl 1263.16028

[14] Hong, C. Y., Kwak, T. K. and Rizvi, S. T., Extensions of generalized Armendariz rings, Algebra Colloq.13 (2006) 253-266. · Zbl 1095.16014

[15] Krempa, J., Some examples of reduced rings, Algebra Colloq.3 (1996) 289-300. · Zbl 0859.16019

[16] Lam, T. Y., Leroy, A. and Matczuk, J., Primeness, semiprimeness and prime radical of Ore extensions, Comm. Algebra25 (1997) 2459-2506. · Zbl 0879.16016

[17] Lam, T. Y., A First Course in Noncommutative Rings, (Springer-Verlag, 1991). · Zbl 0728.16001

[18] Lanski, C., Nil subrings of Goldie rings are nilpotent, Canad. J. Math.21 (1969) 904-907. · Zbl 0182.36701

[19] Lenagan, T. H., Nil ideals in rings with finite Krull dimension, J. Algebra29 (1974) 77-87. · Zbl 0277.16014

[20] Liu, Z. and Zhao, R., On weak Armendariz rings, Comm. Algebra34 (2006) 2607-2616. · Zbl 1110.16026

[21] Marks, G., Direct product and power series formations over \(2\)-primal rings, in Advances in Ring Theory (Birkhuser, Boston, 1997) pp. 239-245. · Zbl 0890.16010

[22] Marks, G., On 2-primal ore extensions, Comm. Algebra29 (2001) 2113-20123. · Zbl 1005.16027

[23] Ouyang, L., Extention of nilpotent p.p. ring, Bull. Iranian Math. Soc.36 (2010), 169-184. · Zbl 1243.16031

[24] Ouyang, L. and Liu, J., On weak \((\alpha, \delta)\)-compatible rings, Int. J. Algebra5 (2011) 1283-1296. · Zbl 1251.16023

[25] Rege, M. B. and Chhawchharia, S., Armendariz rings, Proc. Japan Acad. Ser. A Math. Sci.73 (1997) 14-17. · Zbl 0960.16038

[26] Smoktunowicz, A., Polynomial rings over nil rings need not be nil, J. Algebra233 (2000) 427-436. · Zbl 0969.16006

Paykan, Kamal; Moussavi, Ahmad

Nilpotent elements and nil-Armendariz property of skew generalized power series rings. (English) Zbl 1383.16029

Asian-Eur. J. Math. 10, No. 2, Article ID 1750034, 28 p. (2017).

Summary: Let R be a ring, $(S,\leq)$ a strictly ordered monoid, and $\omega: S\to \mathrm{End}(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S,\omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. In this paper, we introduce and study the (S,ω)-nil-Armendariz condition on R, a generalization of the standard nil-Armendariz condition from polynomials to skew generalized power series. We resolve the structure of (S,ω)-nil-Armendariz rings and obtain various necessary or sufficient conditions for a ring to be (S,ω)-nil-Armendariz. The (S,ω)-nil-Armendariz condition is connected to the question of whether or not a skew generalized power series ring $R[[S,\omega]]$ over a nil ring R is nil, which is related to a question of *A. S. Amitsur* [Proc. Am. Math. Soc. 7, 35–48 (1956; Zbl 0070.03004)]. As particular cases of our general results we obtain several new theorems on the nil-Armendariz condition. Our results extend and unify many existing results.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
06F05 Ordered semigroups and monoids
16U80 Generalizations of commutativity (associative rings and algebras)

Cited in **4** Documents

Keywords:

skew generalized power series ring; (S,ω)-nil-Armendariz ring; (S,ω)-Armendariz ring; NI-ring; nil radical; nilpotent elements

Full Text: DOI

References:

[1] Alhevaz, A. and Moussavi, A., On monoid rings over Nil-Armendariz ring, Comm. Algebra42 (2014) 1-21. · Zbl 1300.16027

[2] Amitsur, A., Algebras over infinite fields, Proc. Amer. Math. Soc.7 (1956) 35-48. · Zbl 0070.03004

[3] Anderson, D. D. and Camillo, V., Armendariz rings and Gaussian rings, Comm. Algebra26(7) (1998) 2265-2272. · Zbl 0915.13001

[4] Antoine, R., Nilpotent elements and Armendariz rings, J. Algebra319(8) (2008) 3128-3140. · Zbl 1157.16007

[5] Armendariz, E. P., A note on extensions of Baer and p.p.-rings, J. Austral. Math. Soc.18 (1974) 470-473. · Zbl 0292.16009

[6] Bell, H. E., Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc.2 (1970) 363-368. · Zbl 0191.02902

[7] Birkenmeier, G. F. and Park, J. K., Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. · Zbl 1054.16018

[8] Chatters, A. W. and Hajarnavis, C. R., Rings with Chain Conditions (Pitman Advanced Publishing, 1980). · Zbl 0446.16001

[9] Chen, J., Yang, X. and Zhou, Y., On strongly clean matrix and triangular matrix rings, Comm. Algebra34 (2006) 3659-3674. · Zbl 1114.16024

[10] Cohn, P. M., Free Rings and Their Relations, 2nd edn. (Academic Press, London, 1985). · Zbl 0659.16001

[11] Elliott, G. A. and Ribenboim, P., Fields of generalized power series, Arch. Math.54 (1990) 365-371. · Zbl 0676.13010

[12] Farbman, S. P., The unique product property of groups and their amalgamated free products, J. Algebra178(3) (1995) 962-990. · Zbl 0847.20021

[13] Fields, D. E., Zero divisors and nilpotent elements in power series rings, Proc. Amer. Math. Soc.27(3) (1971) 427-433. · Zbl 0219.13023

[14] Goodearl, K. R., Von Neumann Regular Rings (Pitman, London, 1979). · Zbl 0411.16007

[15] Goodearl, K. R. and Warfield, R. B., An Introduction to Noncommutative Noetherian Rings (Cambridge University Press, 1989). · Zbl 0679.16001

[16] Habibi, M. and Moussavi, A., On nil skew Armendariz rings, Asian-Eur. J. Math.5(2) (2012), Article ID: 1250017, 16 pp. · Zbl 1263.16028

[17] Habibi, M. and Moussavi, A., Nilpotent elements and Nil-Armendariz property of monoid rings, J. Algebra Appl.11(4) (2012), Article ID: 1250080, 14 pp. · Zbl 1282.16032

[18] Hashemi, E., Nil-Armendariz rings relative to a monoid, Mediterr. J. Math.10(1) (2013) 111-121. · Zbl 1270.16019

[19] Hashemi, E. and Moussavi, A., Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. · Zbl 1081.16032

[20] Herstin, I. N. and Small, L. W., Nil rings satisfying certain chain conditions, Canad. J. Math.16 (1964) 771-776. · Zbl 0129.02004

[21] Hirano, Y., On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra168 (2002) 45-52. · Zbl 1007.16020

[22] Hizem, S., A note on nil power serieswise Armendariz rings, Rend. Circ. Mat. Palermo1(59) (2010) 87-99. · Zbl 1206.16044

[23] Hong, C. Y., Kim, N. K. and Kwak, T. K., On skew Armendariz rings, Comm. Algebra31(1) (2003) 103-122. · Zbl 1042.16014

[24] Hwang, S. U., Jeon, Y. C. and Lee, Y., Structure and topological conditions of NI rings, J. Algebra302 (2006) 186-199. · Zbl 1104.16015

[25] Krempa, J., Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[26] Lam, T. Y., A First Course in Noncommutative Rings (Springer-Verlag, New York, 1991). · Zbl 0728.16001

[27] Lanski, C., Nil subrings of Goldie rings are nilpotent, Canad. J. Math.21 (1969) 904-907. · Zbl 0182.36701

[28] Lee, T. K. and Wong, T. L., On Armendariz rings, Houston J. Math.29(3) (2003) 583-593. · Zbl 1071.16015

[29] Lee, T. K. and Zhou, Y., Armendariz and reduced rings, Comm. Algebra32(6) (2004) 2287-2299. · Zbl 1068.16037

[30] Lee, Y., Huh, C. and Kim, H. K., Questions on 2-primal rings, Comm. Algebra26(2) (1998) 595-600. · Zbl 0901.16009

[31] Lenagan, T. H., Nil ideals in rings with finite Krull dimension, J. Algebra29 (1974) 77-87. · Zbl 0277.16014

[32] Liang, L., Wang, L. and Ziu, Z., On a generalization of semicommutative rings, Taiwanese J. Math.11(5) (2007) 1359-1368. · Zbl 1142.16019

[33] Liu, Z. K., Triangular matrix representations of rings of generalized power series, Acta Math. Sin. (Engl. Ser.)22 (2006) 989-998. · Zbl 1102.16027

[34] Liu, Z. and Zhao, R., On weak Armendariz rings, Comm. Algebra34 (2006) 2607-2616. · Zbl 1110.16026

[35] Marks, G., On 2-primal Ore extensions, Comm. Algebra29 (2001) 2113-2123. · Zbl 1005.16027

[36] Marks, G., Mazurek, R. and Ziembowski, M., A new class of unique product monoids with applications to ring theory, Semigroup Forum78(2) (2009) 210-225. · Zbl 1177.16030

[37] Marks, G., Mazurek, R. and Ziembowski, M., A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc.81 (2010) 361-397. · Zbl 1198.16025

[38] Mazurek, R., Left principally quasi-Baer and left APP-rings of skew generalized power series, J. Algebra Appl.14(3) (2015), Article ID: 1550038, 36 pp. · Zbl 1327.16036

[39] Mazurek, R. and Ziembowski, M., On Von Neumann regular rings of skew generalized power series, Comm. Algebra36(5) (2008) 1855-1868. · Zbl 1159.16032

[40] Mushrub, V., Endomorphisms and invariance of radicals of rings, Contemp. Math.131(2) (1989) 363-379. · Zbl 0770.16005

[41] Nikmehr, M. J., Fatahi, F. and Amraei, H., Nil-Armendariz rings with applications to a monoid, World Appl. Sci. J.13(12) (2011) 2509-2514.

[42] Ouyang, L., Special weak properties of generalized power series, J. Korean Math. Soc.49(4) (2012) 687-701. · Zbl 1252.16041

[43] Ouyang, L. and Jinwang, L., Weak annihilator property of Malcev-Neumann rings, Bull. Malays. Math. Sci. Soc.36(2) (2013) 351-362. · Zbl 1271.16045

[44] Ouyang, L. and Jinwang, L., Nil-Armendariz rings relative to a monoid, Arab. J. Math.2(1) (2013) 81-90. · Zbl 1301.16028

[45] Passman, D., Infinite Crossed Products (Academic Press, 1989). · Zbl 0662.16001

[46] Paykan, K., Moussavi, A. and Zahiri, M., Special properties of rings of skew generalized power series, Comm. Algebra42(12) (2014) 5224-5248. · Zbl 1297.16045

[47] Rege, M. B. and Chhawchharia, S., Armendariz rings, Proc. Japan Acad. Ser. A Math. Sci.73 (1997) 14-17. · Zbl 0960.16038

[48] Ribenboim, P., Rings of generalized power series: Nilpotent elements, Abh. Math. Sem. Univ. Hamburg61 (1991) 15-33. · Zbl 0751.13005

[49] Ribenboim, P., Special properties of generalized power series, J. Algebra173 (1995) 566-586. · Zbl 0852.13008

[50] Ribenboim, P., Some examples of valued fields, J. Algebra173 (1995) 668-678. · Zbl 0846.12005

[51] Ribenboim, P., Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra198 (1997) 327-338. · Zbl 0890.16004

[52] Smoktunowicz, A., Polynomial rings over nil rings need not be nil, J. Algebra233 (2000) 427-436. · Zbl 0969.16006

[53] Tuganbaev, A. A., Some ring and module properties of skew Laurent series, in Formal Power Series and Algebraic Combinatorics (Springer, Berlin, 2000), pp. 613-622. · Zbl 0997.16033

Paykan, Kamal; **Moussavi, Ahmad**

Semiprimeness, quasi-Baerness and prime radical of skew generalized power series rings. (English) Zbl 1395.16048

Commun. Algebra 45, No. 6, 2306-2324 (2017).

Summary: Let R be a ring, $(S,\leq)$, a strictly ordered monoid and $\omega : S \to End(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S,\omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. In this paper we obtain necessary and sufficient conditions for the skew generalized power series ring $R[[S,\omega]]$ to be a semiprime, prime, quasi-Baer, or Baer ring. Furthermore, we study the prime radical of a skew generalized power series ring $R[[S,\omega]]$. Our results extend and unify many existing results. In particular, we obtain new theorems on (skew) group rings, Mal'cev-Neumann Laurent series rings and the ring of generalized power series.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

16S36 Ordinary and skew polynomial rings and semigroup rings

16N60 Prime and semiprime associative rings

16E50 von Neumann regular rings and generalizations (associative algebraic aspects)

Cited in **12** Documents

Keywords:

prime radical; quasi-Baer ring; (S,ω)-Baer ring; (S,ω)-prime; (S,ω)-quasi Baer ring; (S,ω)-semiprime; skew generalized power series ring

Full Text: DOI

References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[2] Bell A. D., When are all prime ideals in an Ore extension Goldie? Commun. Algebra 13 (8) pp 1743– (1985) · Zbl 0567.16002

[3] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[4] DOI: 10.1007/978-3-642-15071-5· doi:10.1007/978-3-642-15071-5

[5] DOI: 10.1112/plms/s3-27.1.69 · Zbl 0234.16005 · doi:10.1112/plms/s3-27.1.69

[6] DOI: 10.1006/jabr.2000.8328 · Zbl 0964.16031 · doi:10.1006/jabr.2000.8328

[7] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[8] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[9] DOI: 10.1216/rmjm/1181070024 · Zbl 1035.16024 · doi:10.1216/rmjm/1181070024

[10] Chatters A. W., Rings with Chain Conditions (1980) · Zbl 0446.16001
[11] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[12] DOI: 10.2140/pjm.1982.98.37 · Zbl 0488.16024 · doi:10.2140/pjm.1982.98.37
[13] Cohn P. M., Free Rings and Their Relations (1985) · Zbl 0659.16001
[14] DOI: 10.4153/CJM-1963-067-0 · Zbl 0121.03502 · doi:10.4153/CJM-1963-067-0
[15] DOI: 10.1007/BF01189583 · Zbl 0676.13010 · doi:10.1007/BF01189583
[16] DOI: 10.1016/0021-8693(78)90272-7 · Zbl 0373.16004 · doi:10.1016/0021-8693(78)90272-7
[17] DOI: 10.1080/00927870903200943 · Zbl 1213.16016 · doi:10.1080/00927870903200943
[18] DOI: 10.4153/CJM-1964-074-0 · Zbl 0129.02004 · doi:10.4153/CJM-1964-074-0
[19] DOI: 10.1081/AGB-100002171 · Zbl 0996.16020 · doi:10.1081/AGB-100002171
[20] Huh C., Bull. Korean Math. Soc. 38 (4) pp 623– (2001)
[21] DOI: 10.1016/0021-8693(79)90341-7 · Zbl 0399.16015 · doi:10.1016/0021-8693(79)90341-7
[22] DOI: 10.4153/CMB-2009-057-6 · Zbl 1189.16024 · doi:10.4153/CMB-2009-057-6
[23] DOI: 10.1112/jlms/s2-25.3.435 · Zbl 0486.16002 · doi:10.1112/jlms/s2-25.3.435
[24] DOI: 10.2307/1969540 · Zbl 0042.12402 · doi:10.2307/1969540
[25] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[26] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7
[27] DOI: 10.1080/00927879708826000 · Zbl 0879.16016 · doi:10.1080/00927879708826000
[28] DOI: 10.4153/CJM-1969-098-x · Zbl 0182.36701 · doi:10.4153/CJM-1969-098-x
[29] DOI: 10.1016/0021-8693(74)90112-4 · Zbl 0277.16014 · doi:10.1016/0021-8693(74)90112-4
[30] DOI: 10.1080/00927872.2011.555801 · Zbl 1283.16038 · doi:10.1080/00927872.2011.555801
[31] DOI: 10.1007/s10114-005-0555-z · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z
[32] DOI: 10.1016/S0022-4049(02)00070-1 · Zbl 1046.16015 · doi:10.1016/S0022-4049(02)00070-1
[33] DOI: 10.1007/s00233-008-9063-7 · Zbl 1177.16030 · doi:10.1007/s00233-008-9063-7
[34] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178
[35] DOI: 10.1142/S0219498815500383 · Zbl 1327.16036 · doi:10.1142/S0219498815500383
[36] DOI: 10.1080/00927870801941150 · Zbl 1159.16032 · doi:10.1080/00927870801941150
[37] DOI: 10.1112/jlms/s2-18.2.209 · Zbl 0394.16025 · doi:10.1112/jlms/s2-18.2.209
[38] Passman D. S., The Algebraic Structure of Group Rings (1977) · Zbl 0368.16003
[39] DOI: 10.1080/00927872.2015.1027370 · Zbl 1346.16042 · doi:10.1080/00927872.2015.1027370
[40] DOI: 10.1080/00927877708822194 · Zbl 0355.16020 · doi:10.1080/00927877708822194
[41] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[42] DOI: 10.1016/0022-4049(92)90056-L · Zbl 0761.13007 · doi:10.1016/0022-4049(92)90056-L
[43] DOI: 10.1006/jabr.1995.1108 · Zbl 0846.12005 · doi:10.1006/jabr.1995.1108
[44] DOI: 10.1006/jabr.1995.1103 · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103
[45] DOI: 10.1006/jabr.1997.7063 · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063
[46] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[47] Rowen L. H., Ring Theory I (1988) · Zbl 0651.16001

Habibi, M.; **Moussavi, A.**; **Šter, J.**
A note on rings with McCoy-like properties. (English) Zbl 1369.16028
Commun. Algebra 45, No. 5, 2276-2279 (2017).

Summary: According to *P. P. Nielsen* [J. Algebra 298, No. 1, 134–141 (2006; Zbl 1110.16036)], a ring R is called *right McCoy* if for every nonzero $f(x), g(x)$ in the polynomial ring $R[x]$, $f(x)g(x) = 0$ implies that there exists a nonzero s in R such that $f(x)s = 0$. In this work, we state two notes on rings with McCoy-like conditions.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
15B33 Matrices over special rings (quaternions, finite fields, etc.)

Keywords:

classical quotient rings; McCoy rings; Ore rings

Full Text: DOI
References:

[1] DOI: 10.1080/00927872.2010.548842 · Zbl 1260.16024 · doi:10.1080/00927872.2010.548842
[2] DOI: 10.1112/S0024609399006116 · Zbl 1021.16019 · doi:10.1112/S0024609399006116
[3] Goodearl K. R., An Introduction to Non-commutative Noetherian Rings (1989) · Zbl 0679.16001
[4] DOI: 10.1080/00927872.2011.623289 · Zbl 1269.16019 · doi:10.1080/00927872.2011.623289
[5] DOI: 10.1016/S0022-4049(03)00109-9 · Zbl 1040.16021 · doi:10.1016/S0022-4049(03)00109-9
[6] DOI: 10.1007/978-1-4612-0525-8· doi:10.1007/978-1-4612-0525-8
[7] DOI: 10.2307/2303094 · Zbl 0060.07703 · doi:10.2307/2303094
[8] DOI: 10.1007/s00009-007-0124-z · Zbl 1142.16015 · doi:10.1007/s00009-007-0124-z
[9] DOI: 10.1080/00927870701718849 · Zbl 1142.16016 · doi:10.1080/00927870701718849
[10] DOI: 10.1016/j.jalgebra.2005.10.008 · Zbl 1110.16036 · doi:10.1016/j.jalgebra.2005.10.008

Paykan, Kamal; Moussavi, Ahmad

Some results on skew generalized power series rings. (English) Zbl 1358.13023

Taiwanese J. Math. 21, No. 1, 11-26 (2017).

A partially ordered set $(S,\leq)$ is said to be Artinian if every strictly decreasing sequence of elements of S is finite and is said to be narrow if every subset of pairwise order-incomparable elements of S is finite. Let R be a ring and $(S,\leq)$ a strictly ordered monoid, both of them are not necessarily commutative. Let $\omega : S \longrightarrow \mathrm{End}E$ a monoid homomorphism. For $s \in S$, put $\omega_s = \omega(s)$. Denote by $R[[S,\omega]]$ the set of all the functions $f : S \longrightarrow R$ such that the support $\mathrm{supp}(f) = \{s \in S; f(s) \neq 0\}$ is Artinian and narrow. Then for any $s \in S$ and $f, g \in R[[S,\omega]]$, the set $X_s(f,g) = \{(x,y) \in \mathrm{supp}(f) \times \mathrm{supp}(g); s = xy\}$ is finite. Thus one can define the product $fg : S \longrightarrow R$ as follows $fg(s) = \sum_{(u,v)\in X_s(f,g)} f(u)\omega_u g(v)$. With pointwise addition and this multiplication, $R[[S,\omega]]$ becomes a ring, called the ring of skew generalized power series with coefficients in R and exponents in S. This kind of construction includes many classical ring constructions. In this paper, the authors study when $R[[S,\omega]]$ has a (flat) projective socle and when it is local, semilocal, semiperfect, semiregular, left quasi-duo, clean, exchange, right stable range one, projective-free and I-ring.

Reviewer: Ali Benhissi (Monastir)

MSC:

13F25 Formal power series rings
16E50 von Neumann regular rings and generalizations (associative algebraic aspects)
16S99 Associative rings and algebras arising under various constructions
06F05 Ordered semigroups and monoids

Cited in **7** Documents

Keywords:

skew generalized power series ring; (flat)projective socle; local; semilocal; semiperfect; semiregular; I-ring; quasi-duo ring; projective-free ring

Full Text: DOI

Mansoub, A. Karimi; **Moussavi, A.**; **Habibi, M.**
Strongly clean elements of a skew monoid ring. (English) Zbl 1358.16024
Int. Electron. J. Algebra 21, 164-179 (2017).

Let σ be an endomorphism of an associative unital ring R. Let M be a Rees factor of the finitely generated free monoid $\langle u_1, \ldots, u_t\rangle$ for which there exists $n \geq 1$ such that every $w \in M, w \neq 1$, satisfies $w^n = 0$. Skew monoid rings $R[M, \sigma]$, where $u_i r = \sigma(r) u_i$ for every i, are considered. The main result claims a description of a family of strongly clean elements in $R[M, \sigma]$. The result is not correct; it is based on an incorrect Theorem 2.9 from [the last two authors, Commun. Algebra 42, No. 2, 842–852 (2014; Zbl 1297.16022)], claiming a description of the Jacobson radical of such rings $R[M, \sigma]$. A simple counterexample can be obtained by taking the Thue-Morse monoid M and $\sigma = id_R$, for a field R. Such a ring is semiprimitive, while, according to Theorem 2.9, its Jacobson radical should be of codimension 1.

Reviewer: Jan Okniński (Warszawa)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16U99 Conditions on elements
20M25 Semigroup rings, multiplicative semigroups of rings

Keywords:

skew monoid ring; strongly clean ring

Full Text: DOI Link

Paykan, K.; **Moussavi, A.**
Special properties of differential inverse power series rings. (English) Zbl 1375.16019
J. Algebra Appl. 15, No. 10, Article ID 1650181, 23 p. (2016).

Summary: In this paper, we continue to study the differential inverse power series ring $R[[x^{-1}; \delta]]$, where R is a ring equipped with a derivation δ. We characterize when $R[[x^{-1}; \delta]]$ is a local, semilocal, semiperfect, semiregular, left quasi-duo, (uniquely) clean, exchange, right stable range one, abelian, projective-free, I-ring, respectively. Furthermore, we prove that $R[[x^{-1}; \delta]]$ is a domain satisfying the ACC on principal left ideals if and only if so does R. Also, for a piecewise prime ring (PWP) R we determine a large class of the differential inverse power series ring $R[[x^{-1}; \delta]]$ which have a generalized triangular matrix representation for which the diagonal rings are prime. In particular, it is proved that, under suitable conditions, if R has a (flat) projective socle, then so does $R[[x^{-1}; \delta]]$. Our results extend and unify many existing results.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Cited in **11** Documents

Keywords:

differential inverse power series ring; local; semilocal; semiperfect I-ring; clean; quasi-duo; projective-free ring; ascending chain conditions for principal one-sided ideals; semicentral idempotent; generalized triangular matrix representation; piecewise prime ring; (principally) quasi-Baer ring; triangulating dimension; (flat) projective socle ring

Full Text: DOI
References:

[1] 1. A. Alhevaz and D. Kiani, Radicals of skew inverse Laurent series rings, Comm. Algebra41(8) (2013) 2884-2902. genRefLink(16, 'S0219498816501814BIB001', '10.1080%252F00927872.2012.665536'); genRefLink(128, 'S0219498816501814BIB001', '000326671400007');

[2] 2. D. D. Anderson, D. F. Anderson and M. Zafrullah, Factorization in integral domains, J. Pure Appl. Algebra69 (1990) 1-19. genRefLink(16, 'S0219498816501814BIB002', '10.1016%252F0022-4049%252890%252990074-R'); genRefLink(128, 'S0219498816501814BIB002', 'A1990EQ85400001');

[3] 3. H. Bass, Finitistic dimension and a homological generalization of semi-primary rings, Trans. Amer. Math. Soc.95 (1960) 466-488. genRefLink(16, 'S0219498816501814BIB003', '10.1090%252FS0002-9947-1960-0157984-8'); · Zbl 0094.02201

[4] 4. G. F. Birkenmeier, Idempotents and completely semiprime ideals, Comm. Algebra11 (1983) 567-580. genRefLink(16, 'S0219498816501814BIB004', '10.1080%252F00927878308822865'); genRefLink(128, 'S0219498816501814BIB004', 'A1983QL63900001');

[5] 5. G. F. Birkenmeier, J. Y. Kim and J. K. Park, On quasi-Baer rings, Contemp. Math.259 (2000) 67-92. genRefLink(16, 'S0219498816501814BIB005', '10.1090%252Fconm%252F259%252F04088'); · Zbl 0974.16006

[6] 6. G. F. Birkenmeier, H. E. Heatherly, J. Y. Kim and J. K. Park, Triangular matrix representations, J. Algebra230 (2000) 558-595. genRefLink(16, 'S0219498816501814BIB006', '10.1006%252Fjabr.2000.8328'); genRefLink(128, 'S0219498816501814BIB006', '000088703000010');

[7] 7. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Principally quasi-Baer rings, Comm. Algebra29(2) (2001) 639-660. genRefLink(16, 'S0219498816501814BIB007', '10.1081%252FAGB-100001530'); genRefLink(128, 'S0219498816501814BIB007', '000170042600012');

[8] 8. G. F. Birkenmeier and J. K. Park, Triangular matrix representations of ring extensions, J. Algebra265 (2003) 457-477. genRefLink(16, 'S0219498816501814BIB008', '10.1016%252FS0021-8693%252803%252900155-8'); genRefLink(128, 'S0219498816501814BIB008', '000184057100004');

[9] 9. V. Camillo and H.-P. Yu, Exchange rings, units, and idempotents, Comm. Algebra22(12) (1994) 4737-4749. genRefLink(16, 'S0219498816501814BIB009', '10.1080%252F00927879408825098'); genRefLink(128, 'S0219498816501814BIB009', 'A1994PB25000008');

[10] 10. W. E. Clark, Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-424. genRefLink(16, 'S0219498816501814BIB010', '10.1215%252FS0012-7094-67-03446-1'); genRefLink(128, 'S0219498816501814BIB010', 'A1967A084900005');

[11] 11. P. M. Cohn, Free Rings and Their Relations, 2nd edn. London Math. Soc. Monogr. Ser., Vol. 19 (Academic Press, London, NewYork, 1985). · Zbl 0659.16001

[12] 12. P. M. Cohn, Some remarks on projective-free rings, Algebra Universalis49 (2003) 159-164. genRefLink(16, 'S0219498816501814BIB012', '10.1007%252Fs00012-003-1725-4'); genRefLink(128, 'S0219498816501814BIB012', '000185201500004');

[13] 13. T. Dumitrescu, S. O. I. Al-Salihi, N. Radu and T. Shah, Some factorization properties of composite domains A+XB[X] and A+XB[[X]], Comm. Algebra28(3) (2000) 1125-1139. genRefLink(16, 'S0219498816501814BIB013', '10.1080%252F00927870008826885'); genRefLink(128, 'S0219498816501814BIB013', '000085637100004');

[14] 14. A. S. Dzumadildaev, Derivations and central extensions of the Lie algebra of formal pseudo differential operators, Algebra Anal.6(1) (1994) 140-158.

[15] 15. E. G. Evans, Krull-Schmidt and cancellation over local rings, Pacific J. Math.46 (1973) 115-121. genRefLink(16, 'S0219498816501814BIB015', '10.2140%252Fpjm.1973.46.115'); genRefLink(128, 'S0219498816501814BIB015', 'A1973Q549600008');

[16] 16. C. Faith, Algebra II (Springer-Verlag, Berlin New York, 1976).

[17] 17. D. Frohn, A counterexample concerning ACCP in power series rings, Comm. Algebra30 (2002) 2961-2966. genRefLink(16, 'S0219498816501814BIB017', '10.1081%252FAGB-120004001'); genRefLink(128, 'S0219498816501814BIB017', '000176506400027');

[18] 18. D. Frohn, Modules with n-acc and the acc on certain types of annihilators, J. Algebra256 (2002) 467-483. genRefLink(16, 'S0219498816501814BIB018', '10.1016%252FS0021-8693%252802%252900039-X'); genRefLink(128, 'S0219498816501814BIB018', '000179758700008');

[19] 19. K. R. Goodearl, Centralizers in differential, pseudo-differential, and fractional differential operator rings, Rocky Mountain J. Math.13(4) (1983) 573-618. genRefLink(16, 'S0219498816501814BIB019', '10.1216%252FRMJ-1983-13-4-573'); genRefLink(128, 'S0219498816501814BIB019', 'A1983RW86600003');

[20] 20. K. R. Goodearl and R. B. Warfield, Jr., An Introduction to Noncommutative Noetherian Rings, Vol. 61. Second Edition, London Mathematical Society Student Texts (Cambridge University Press, Cambridge, 2004). genRefLink(16, 'S0219498816501814BIB020', '10.1017%252FCBO9780511841699'); · Zbl 1101.16001

[21] 21. R. Gordon, Rings in which minimal left ideals are projective, Pacific J. Math.31 (1969) 679-692. genRefLink(16, 'S0219498816501814BIB021', '10.2140%252Fpjm.1969.31.679'); genRefLink(128, 'S0219498816501814BIB021', 'A1969F412300013');

[22] 22. R. Gordon and L. W. Small, Piecewise domains, J. Algebra23 (1972) 553-564. genRefLink(16, 'S0219498816501814BIB022', '10.1016%252F0021-8693%252872%252990121-4'); genRefLink(128, 'S0219498816501814BIB022', 'A1972O085300010');

[23] 23. W. Heinzer and D. Lantz, ACCP in polynomial rings: A counterexample, Proc. Amer. Math. Soc.121 (1994) 975-977. genRefLink(16, 'S0219498816501814BIB023', '10.1090%252FS0002-9939-1994-1232140-9'); genRefLink(128, 'S0219498816501814BIB023', 'A1994NU56200044'); · Zbl 0828.13013

[24] 24. D. Jonah, Rings with the minimum condition for principal right ideals have the maximum condition for principal left ideals, Math. Z.113 (1970) 106-112. genRefLink(16, 'S0219498816501814BIB024', '10.1007%252FBF01141096'); genRefLink(128, 'S0219498816501814BIB024', 'A1970F015700002');

[25] 25. P. Kanwar, A. Leroy and J. Matczuk, Idempotents in ring extensions, J. Algebra389 (2013) 128-136. genRefLink(16, 'S0219498816501814BIB025', '10.1016%252Fj.jalgebra.2013.05.010'); genRefLink(128, 'S0219498816501814BIB025', '000321021900008');

[26] 26. I. Kaplansky, Rings of Operators (Benjamin, New York, 1965). · Zbl 0174.18503

[27] 27. C. O. Kim, H. K. Kim and S. H. Jang, A study on quasi-duo rings, Bull. Korean Math. Soc.36(3) (1999) 579-588. · Zbl

0938.16002

[28] 28. T. Y. Lam, A First Course in Noncommutative Rings, Graduate Texts in Math. Vol. 131 (Springer-Verlag, Berlin-Heidelberg-New York, 1991). genRefLink(16, 'S0219498816501814BIB028', '10.1007%252F978-1-4684-0406-7'); · Zbl 0728.16001

[29] 29. T. Y. Lam and A. S. Dugas, Quasi-duo rings and stable range descent, J. Pure Appl. Algebra195 (2005) 243-259. genRefLink(16, 'S0219498816501814BIB029', '10.1016%252Fj.jpaa.2004.08.011'); genRefLink(128, 'S0219498816501814BIB029', '000226432400003');

[30] 30. A. Leroy, J. Matczuk and E. R. Puczylowski, Quasi-duo skew polynomial rings, J. Pure Appl. Algebra212 (2008) 1951-1959. genRefLink(16, 'S0219498816501814BIB030', '10.1016%252Fj.jpaa.2008.01.002'); genRefLink(128, 'S0219498816501814BIB030', '000256168500006');

[31] 31. E. S. Letzter and L. Wang, Notherian skew inverse power series rings, Algebras and Representation Theory13 (2010) 303-314. genRefLink(16, 'S0219498816501814BIB031', '10.1007%252Fs10468-008-9123-4'); genRefLink(128, 'S0219498816501814BIB031', '000277095600003');

[32] 32. L. Zhongkui, Rings with flat left socle, Comm. Algebra23(5) (1995) 1645-1656. genRefLink(16, 'S0219498816501814BIB032', '10.1080%252F00927879508825301'); genRefLink(128, 'S0219498816501814BIB032', 'A1995QR77300004');

[33] 33. L. Zhongkui and L. Fang, PS-rings of generalized power series, Comm. Algebra26(7) (1998) 2283-2291. genRefLink(16, 'S0219498816501814BIB033', '10.1080%252F00927879808826276'); genRefLink(128, 'S0219498816501814BIB033', '000074275200018');

[34] 34. Z. K. Liu, Triangular matrix representations of rings of generalized power series, Acta Math. Sin. (Engl. Ser.)22(4) (2006) 989-998. genRefLink(16, 'S0219498816501814BIB034', '10.1007%252Fs10114-005-0555-z'); genRefLink(128, 'S0219498816501814BIB034', '000239319400003');

[35] 35. Z. K. Liu and Y. Xiaoyan, Triangular matrix representaions of skew monoid rings, Math. J. Okayama Univ.52 (2010) 97-109. · Zbl 1217.16021

[36] 36. R. Manaviyat, A. Moussavi and M. Habibi, Pseudo-differential operator rings with Armendariz-like condition, Comm. Algebra40(3) (2012) 1103-1115. genRefLink(16, 'S0219498816501814BIB036', '10.1080%252F00927872.2010.545962'); genRefLink(128, 'S0219498816501814BIB036', '000301638900020');

[37] 37. R. Mazurek and M. Ziembowski, The ascending chain condition for principal left or right ideals of skew generalized power series rings, J. Algebra322 (2009) 983-994. genRefLink(16, 'S0219498816501814BIB037', '10.1016%252Fj.jalgebra.2009.03.040'); genRefLink(128, 'S0219498816501814BIB037', '000267952800003'); · Zbl 1188.16040

[38] 38. M. S. Montgomery, Von Neumann finiteness of tensor products of algebras, Comm. Algebra11 (1983) 595-610. genRefLink(16, 'S0219498816501814BIB038', '10.1080%252F00927878308822867'); genRefLink(128, 'S0219498816501814BIB038', 'A1983QL63900003');

[39] 39. A. R. Nasr-Isfahani, The ascending chain condition for principal left ideals of skew polynomial rings, Taiwanese J. Math.3(18) (2014) 931-941. · Zbl 1357.16043

[40] 40. W. K. Nicholson, I-rings, Trans. Amer. Math. Soc.207 (1975) 361-373. genRefLink(128, 'S0219498816501814BIB040', 'A1975AJ35000015');

[41] 41. W. K. Nicholson, Semiregular modules and rings, Can. J. Math.XXXIII(5) (1976) 1105-1120. genRefLink(16, 'S0219498816501814BIB041', '10.4153%252FCJM-1976-109-2'); genRefLink(128, 'S0219498816501814BIB041', 'A1976CK42600023');

[42] 42. W. K. Nicholson, Lifting idempotents and exchange rings, Tran. Am. Math. Soc.229 (1977) 269-278. genRefLink(16, 'S0219498816501814BIB042', '10.1090%252FS0002-9947-1977-0439876-2'); genRefLink(128, 'S0219498816501814BIB042', 'A1977DN77100013');

[43] 43. W. K. Nicholson and J. F. Watters, Rings with projective socle, Proc. Amer. Math. Soc.102(3) (1988) 443-450. genRefLink(16, 'S0219498816501814BIB043', '10.1090%252FS0002-9939-1988-0928957-5'); genRefLink(128, 'S0219498816501814BIB043', 'A1988N339100001');

[44] 44. W. K. Nicholson and Y. Zhou, Rings in which elements are uniquely the sum of an idempotent and a unit, Glasgow Math. J.46 (2004) 227-236. genRefLink(16, 'S0219498816501814BIB044', '10.1017%252FS0017089504001727'); genRefLink(128, 'S0219498816501814BIB044', '000221848800003'); · Zbl 1057.16007

[45] 45. K. Paykan and A. Moussavi, Special properties of rings of skew inverse Laurent series, Communications in Algebra (under Review). · Zbl 1346.16042

[46] 46. P. Pollingher and A. Zaks, On Baer and quasi-Baer rings, Duke Math. J.37 (1970) 127-138. genRefLink(16, 'S0219498816501814BIB046', '10.1215%252FS0012-7094-70-03718-X'); genRefLink(128, 'S0219498816501814BIB046', 'A1970F983200018');

[47] 47. I. Schur, Uber vertauschbare lineare Differentialausdrucke, Sitzungsber, Berliner Math. Ges.4 (1905) 2-8.

[48] 48. A. B. Singh, Triangular matrix representation of skew generalized power series rings, Asian-European J. Math.5(4) (2012) Article ID:1250027, 11 pp. [Abstract] · Zbl 1268.16038

[49] 49. A. A. Tuganbaev, Polynomial and series rings and principal ideals, J. Math. Sci.114(2) (2003) 1204-1226. genRefLink(16, 'S0219498816501814BIB049', '10.1023%252FA%253A1021929720585'); · Zbl 1068.16055

[50] 50. D. A. Tuganbaev, Laurent series rings and pseudo-differential operator rings, J. Math. Sci.128(3) (2005) 2843-2893. genRefLink(16, 'S0219498816501814BIB050', '10.1007%252Fs10958-005-0244-6'); · Zbl 1122.16033

[51] 51. R. B. Warfield, Exchange rings and decompositions of modules, Math. Ann.199 (1972) 31-36. genRefLink(16, 'S0219498816501814BIB051', '10.1007%252FBF01419573'); genRefLink(128, 'S0219498816501814BIB051', 'A1972O125400003');

[52] 52. R. B. Warfield, Serial rings and finitely presented modules, J. Algebra37 (1975) 187-222. genRefLink(16, 'S0219498816501814BIB052', '10.1016%252F0021-8693%252875%252990074-5'); genRefLink(128, 'S0219498816501814BIB052', 'A1975AU72000001');

[53] 53. Y. Xiao, Rings with flat socles, Proc. Amer. Math. Soc.123(8) (1995) 2391-2395. genRefLink(16, 'S0219498816501814BIB053', '10.1090%252FS0002-9939-1995-1254860-3'); genRefLink(128, 'S0219498816501814BIB053', 'A1995RP15100014');

[54] 54. H.-P. Yu, On quasi-duo rings, Glasgow Math. J.37 (1995) 21-31. genRefLink(16, 'S0219498816501814BIB054', '10.1017%252FS001708950003034
genRefLink(128, 'S0219498816501814BIB054', 'A1995QL38900003');

[55] 55. R. Y. Zhao and Z. K. Liu, Triangular matrix representations of Malcev-Neumann rings, South Asian Bull. Math.33 (2009) 1013-1021. · Zbl 1203.16032

Mohammadi, Rasul; **Moussavi, Ahmad**; **Zahiri, Masoome**
On annihilations of ideals in skew monoid rings. (English) Zbl 1353.16029
J. Korean Math. Soc. 53, No. 2, 381-401 (2016).

Skew model rings $R * M$ of a monoid M over an unital ring R, subject to a monoid homomorphism $\sigma : M \to \mathrm{End}$, are considered. The authors' nonzero right annihilator is right bounded, i.e., it contains a nonzero two-sided ideal. This notion was introduced by *S. U. Hwang* et al. [Glasg. Math. J. 51, No. 3, 539–559 (2009; Zbl 1198.16001)]. Certain necessary and certain sufficient conditions on R and M are determined for $R * M$ to be a strongly right AB-ring.

All of the main results are proved under the hypothesis that M is a unique product monoid. For example, if R is a nil-reversible ring (meaning that, if $a \in R$ and $b \in \mathrm{nil}(R)$, then $ab = 0$ if and only if $ba = 0$) and R is M-compatible, then $R * M$ is a strongly right AB-ring. Here, M-compatibility means that $ab = 0$ if and only if $a(\sigma(m)(b)) = 0$, for every $a, b \in R$ and $m \in M$.

In another direction, it is shown that under some additional hypotheses, the strong right AB-property on $R * M$ implies that $R * M$ has the right property (A), introduced in the noncommutative setting by *C. Y. Hong* et al. [J. Algebra 315, No. 2, 612–628 (2007; Zbl 1156.16001)].

The latter property is concerned with right annihilators of two-sided ideals and it is a generalization of the notion introduced by *J. A. Huckaba* and *J. M. Keller* [Pac. J. Math. 83, 375–379 (1979; Zbl 0388.13001)] for the class of commutative rings. Relations between the strong right AB-property and the M-Armendariz and M-McCoy properties are also studied for the considered class of skew monoid rings $R * M$.

Reviewer: Jan Okniński (Warszawa)

MSC:

16S36	Ordinary and skew polynomial rings and semigroup rings
16D25	Ideals in associative algebras
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16S34	Group rings
20M99	Semigroups
16N40	Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **7** Documents

Keywords:

skew monoid ring; strongly right AB ring; ring with property (A); McCoy ring; nil-reversible ring; unique product monoid

Full Text: DOI Link

Paykan, K.; **Moussavi, A.**
Baer and quasi-Baer properties of skew generalized power series rings. (English) Zbl 1346.16042
Commun. Algebra 44, No. 4, 1615-1635 (2016).

Summary: Let R be a ring, $(S, \leq)$ a strictly ordered monoid and $\omega\colon S \to \mathrm{End}(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S, \omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. In this article, we study relations between the (quasi-) Baer, principally quasi-Baer and principally projective properties of a ring R, and its skew generalized power series extension $R[[S,\omega]]$. As particular cases of our general results, we obtain new theorems on (skew) group rings, Mal'cev-Neumann Laurent series rings, and the ring of generalized power series.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

Cited in **9** Documents

16S36 Ordinary and skew polynomial rings and semigroup rings

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

16U80 Generalizations of commutativity (associative rings and algebras)

Keywords:

PP rings; principally projective rings; quasi-Baer rings; p.q.-Baer rings; skew generalized power series rings; Armendariz rings

Full Text: DOI

References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[2] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[3] DOI: 10.1007/978-3-642-15071-5· doi:10.1007/978-3-642-15071-5

[4] DOI: 10.1112/plms/s3-27.1.69 · Zbl 0234.16005 · doi:10.1112/plms/s3-27.1.69

[5] DOI: 10.1090/conm/259/04088· doi:10.1090/conm/259/04088

[6] Birkenmeier G. F., Kyungpook Math. J. 40 pp 247– (2000)

[7] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[8] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[9] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[10] Chase S. A., Nagoya Math. J. 18 pp 13– (1961)

[11] Cheng Y., Taiwan. J. Math. 45 (4) pp 469– (2008)

[12] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[13] DOI: 10.2140/pjm.1982.98.37 · Zbl 0488.16024 · doi:10.2140/pjm.1982.98.37

[14] Cohn P. M., Free Rings and Their Relations (1985) · Zbl 0659.16001

[15] DOI: 10.1007/BF01189583 · Zbl 0676.13010 · doi:10.1007/BF01189583

[16] Endo S., Nagoya Math. J. 17 pp 167– (1960)

[17] DOI: 10.1006/jabr.1995.1385 · Zbl 0847.20021 · doi:10.1006/jabr.1995.1385

[18] DOI: 10.1016/0021-8693(78)90272-7 · Zbl 0373.16004 · doi:10.1016/0021-8693(78)90272-7

[19] Fraser J. A., Math Japonica 34 (5) pp 715– (1989)

[20] Groenewald N., Publ. L'institute Math. 34 pp 71– (1983)

[21] DOI: 10.1080/00927872.2011.600746 · Zbl 1276.16039 · doi:10.1080/00927872.2011.600746

[22] DOI: 10.4134/BKMS.2004.41.4.657 · Zbl 1065.16025 · doi:10.4134/BKMS.2004.41.4.657

[23] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[24] Hashemi E., Bull. Iranian. Math. Soc. 29 (2) pp 65– (2003)

[25] Hashemi E., Stud. Scie. Math. Hungar. 45 (4) pp 469– (2008)

[26] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[27] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1

[28] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[29] DOI: 10.2307/1969540 · Zbl 0042.12402 · doi:10.2307/1969540

[30] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503

[31] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017

[32] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)

[33] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7
[34] DOI: 10.1080/00927870008826861 · Zbl 0949.16026 · doi:10.1080/00927870008826861
[35] DOI: 10.1007/s1011400000884 · Zbl 1015.16046 · doi:10.1007/s1011400000884
[36] Liu Z. K., Glasg. Math. J. 44 (2) pp 463– (2002)
[37] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825
[38] DOI: 10.1081/AGB-120039287 · Zbl 1067.16064 · doi:10.1081/AGB-120039287
[39] DOI: 10.1081/AGB-200049869 · Zbl 1088.16021 · doi:10.1081/AGB-200049869
[40] DOI: 10.1007/s10114-005-0555-z · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z
[41] DOI: 10.1080/00927870903045173 · Zbl 1202.16024 · doi:10.1080/00927870903045173
[42] DOI: 10.1016/S0022-4049(02)00070-1 · Zbl 1046.16015 · doi:10.1016/S0022-4049(02)00070-1
[43] DOI: 10.1007/s00233-008-9063-7 · Zbl 1177.16030 · doi:10.1007/s00233-008-9063-7
[44] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178
[45] DOI: 10.1080/00927870801941150 · Zbl 1159.16032 · doi:10.1080/00927870801941150
[46] DOI: 10.1142/S0219498815500383 · Zbl 1327.16036 · doi:10.1142/S0219498815500383
[47] DOI: 10.1112/jlms/s2-18.2.209 · Zbl 0394.16025 · doi:10.1112/jlms/s2-18.2.209
[48] DOI: 10.4134/BKMS.2009.46.6.1041 · Zbl 1188.16023 · doi:10.4134/BKMS.2009.46.6.1041
[49] DOI: 10.1017/S0017089509005084 · Zbl 1184.16026 · doi:10.1017/S0017089509005084
[50] DOI: 10.1080/00927872.2013.836532 · Zbl 1297.16045 · doi:10.1080/00927872.2013.836532
[51] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[52] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14
[53] DOI: 10.1006/jabr.1995.1103 · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103
[54] DOI: 10.1006/jabr.1995.1108 · Zbl 0846.12005 · doi:10.1006/jabr.1995.1108
[55] DOI: 10.1006/jabr.1997.7063 · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063
[56] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[57] Sherman S., Proc. Internat. Congr. Math. Cambridge 1 pp 470– (1950)
[58] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3
[59] DOI: 10.3792/pja/1195526177 · Zbl 0057.09705 · doi:10.3792/pja/1195526177
[60] DOI: 10.1007/978-3-662-04166-6_60· doi:10.1007/978-3-662-04166-6$_6$0

Moussavi, A.

On radicals of skew inverse Laurent series rings. (English) Zbl 1345.16020

Algebra Colloq. 23, No. 2, 335-346 (2016).

For a ring R, the well-known result of Amitsur giving the Jacobson radical of a polynomial ring $R[x]$, $J(R[x]) = (J(R[x]) \cap R)[x]$ and $J(R[x]) \cap R$ is a nil ideal of R (which coincides with the nil radical of R when R is commutative), has been generalized to skew polynomial rings, skew Laurent polynomial rings and skew formal power series rings. For the rings of formal skew inverse Laurent series and the ring of formal skew power series in x^{-1}, information on their Jacobson radical, respectively, is known only for a few cases; mostly where the base ring R fulfills some finiteness requirement.

In this paper the author follows a different approach. It is rather assumed that the base ring R fulfills an Armendariz-like condition (product of two power series zero implies certain products of coefficients zero). For such a ring R, if S denotes any one of the five types of rings mentioned above, it is shown that $\text{rad}(S) = \text{rad}(R)S = \text{nil}(S)$ and $\text{rad}(S) \cap R = \text{nil}(R)$ where $\text{rad}(-)$ denotes a radical that could be any one of the Wedderburn, lower nil, Levitzki, upper nil or Jacobson radicals and $\text{nil}(R)$ is the set of nilpotent elements of R.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16N80 General radicals and associative rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16N20 Jacobson radical, quasimultiplication
16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16S36 Ordinary and skew polynomial rings and semigroup rings

Keywords:
Amitsur condition; nilpotent elements; skew inverse Laurent series rings; Jacobson radical; nil radical; nil ideals; Armendariz-like condition

Full Text: DOI
References:

[1] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2
[2] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274
[3] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[4] DOI: 10.1007/BF02760658 · Zbl 0436.16002 · doi:10.1007/BF02760658
[5] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052
[6] Birkenmeier G.F., NJ pp 102– (1993)
[7] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791
[8] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1
[9] DOI: 10.4153/CJM-1964-074-0 · Zbl 0129.02004 · doi:10.4153/CJM-1964-074-0
[10] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[11] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752
[12] DOI: 10.1016/j.jalgebra.2010.12.028 · Zbl 1230.16024 · doi:10.1016/j.jalgebra.2010.12.028
[13] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179
[14] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)
[15] DOI: 10.4153/CJM-1969-098-x · Zbl 0182.36701 · doi:10.4153/CJM-1969-098-x
[16] DOI: 10.1081/AGB-120037221 · Zbl 1068.16037 · doi:10.1081/AGB-120037221
[17] DOI: 10.1007/s10468-008-9123-4 · Zbl 1217.16038 · doi:10.1007/s10468-008-9123-4
[18] DOI: 10.1080/00927878308822945 · Zbl 0521.16015 · doi:10.1080/00927878308822945
[19] DOI: 10.1080/00927872.2010.525728 · Zbl 1261.16045 · doi:10.1080/00927872.2010.525728
[20] DOI: 10.1017/S0013091500018319 · Zbl 0804.16029 · doi:10.1017/S0013091500018319
[21] DOI: 10.1080/00927872.2010.495932 · Zbl 1241.16029 · doi:10.1080/00927872.2010.495932
[22] DOI: 10.1006/jabr.2000.8451 · Zbl 0969.16006 · doi:10.1006/jabr.2000.8451
[23] Sonin K.I., Fundam. Prikl. Mat. 1 (2) pp 565– (1995)
[24] Sonin K.I., I Mat. Mekh.) 4 pp 22– (1997)
[25] Tuganbaev D.A., Fundam. Prikl. Mat. 6 (3) pp 913– (2000)

Paykan, K.; Moussavi, A.
Quasi-Armendariz generalized power series rings. (English) Zbl 1346.16041
J. Algebra Appl. 15, No. 5, Article ID 1650086, 38 p. (2016).

Summary: Let R be a ring, $(S,\leq)$ a strictly ordered monoid and $\omega\colon S\to \mathrm{End}(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S,\omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. We initiate the study of the (S,ω)-quasi-Armendariz condition on R, a generalization of the standard quasi-Armendariz condition from polynomials to skew generalized power series. The class of quasi-Armendariz rings includes semiprime rings, Armendariz rings, right (left) p.q.-Baer rings and right (left) PP rings. The (S,ω)-quasi-Armendariz rings are closed under direct sums, upper triangular matrix rings, full matrix rings and Morita invariance. The 2×2 formal upper triangular matrix rings of this class are characterized. We conclude some characterizations for a skew generalized power series ring to be semiprime, quasi-Baer, generalized quasi-Baer, primary, nilary, reflexive, ideal-symmetric and left AIP. Examples to illustrate and delimit the theory are provided.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

Cited in **4** Documents

16S36 Ordinary and skew polynomial rings and semigroup rings

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

16S50 Endomorphism rings; matrix rings

16U80 Generalizations of commutativity (associative rings and algebras)

Keywords:

skew generalized power series rings; quasi-Armendariz rings; quasi-Baer rings; AIP rings; generalized quasi-Baer rings; generalized triangular matrix rings; skew triangular matrix rings

Full Text: DOI

References:

[1] 1. E. P. Armendariz, A note on extensions of Baer and p.p.-rings, J. Austral. Math. Soc.18 (1974) 470-473. genRefLink(16, 'S0219498816500869BIB001', '10.1017%252FS1446788700029190'); · Zbl 0292.16009

[2] 2. M. Baser, F. Kaynarca, T. K. Kwak and Y. Lee, Weak quasi-Armendariz rings, Algebra Colloq.18(4) (2011) 541-552. [Abstract] genRefLink(128, 'S0219498816500869BIB002', '000295642200001'); · Zbl 1236.16024

[3] 3. M. Baser and T. K. Kwak, Quasi-Armendariz property for skew polynomial rings, Commun. Korean Math. Soc.26(4) (2011) 557-573. genRefLink(16, 'S0219498816500869BIB003', '10.4134%252FCKMS.2011.26.4.557'); · Zbl 1236.16025

[4] 4. H. E. Bell, Near-rings in which each element is a power of itself, Bull. Aust. Math. Soc.2 (1970) 363-368. genRefLink(16, 'S0219498816500869BIB004', '10.1017%252FS0004972700042052'); · Zbl 0191.02902

[5] 5. S. K. Berberian, Baer*-Rings (Springer, Berlin, 1972). genRefLink(16, 'S0219498816500869BIB005', '10.1007%252F978-3-642-15071-5');

[6] 6. G. M. Bergman and I. M. Issacs, Rings with fixed-point-free group actions, Proc. London Math. Soc.27 (1973) 69-87. genRefLink(16, 'S0219498816500869BIB006', '10.1112%252Fplms%252Fs3-27.1.69'); genRefLink(128, 'S0219498816500869BIB006', 'A1973Q305800005');

[7] 7. G. F. Birkenmeier, J. Y. Kim and J. K. Park, On quasi-Baer rings, Contemp. Math.259 (2000) 67-92. genRefLink(16, 'S0219498816500869BIB007', '10.1090%252Fconm%252F259%252F04088'); · Zbl 0974.16006

[8] 8. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Principally quasi-Baer rings, Comm. Algebra29(2) (2001) 639-660. genRefLink(16, 'S0219498816500869BIB008', '10.1081%252FAGB-100001530'); genRefLink(128, 'S0219498816500869BIB008', '000170042600012');

[9] 9. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Polynomial extensions of Baer and quasi-Baer rings, J. Pure Appl. Algebra159 (2001) 24-42. genRefLink(16, 'S0219498816500869BIB009', '10.1016%252FS0022-4049%252800%252900055-4'); genRefLink(128, 'S0219498816500869BIB009', '000168287600003');

[10] 10. G. F. Birkenmeier, J. Y. Kim and J. K. Park, Right primary and nilary rings and ideals, J. Algebra378 (2013) 133-152. genRefLink(16, 'S0219498816500869BIB010', '10.1016%252Fj.jalgebra.2012.12.016'); genRefLink(128, 'S0219498816500869BIB010', '000315127700009');

[11] 11. G. F. Birkenmeier and J. K. Park, Triangular matrix representations of ring extensions, J. Algebra265(2) (2003) 457-477. genRefLink(16, 'S0219498816500869BIB011', '10.1016%252FS0021-8693%252803%252900155-8'); genRefLink(128, 'S0219498816500869BIB011', '000184057100004');

[12] 12. V. Camillo, T. K. Kwak and Y. Lee, Ideal-symmetric and semiprime rings, Comm. Algebra41 (2013) 4504-4519. genRefLink(16, 'S0219498816500869BIB012', '10.1080%252F00927872.2012.705402'); genRefLink(128, 'S0219498816500869BIB012', '000324678500009');

[13] 13. J. Chen, X. Yang and Y. Zhou, On strongly clean matrix and triangular matrix rings, Comm. Algebra34 (2006) 3659-3674. genRefLink(16, 'S0219498816500869BIB013', '10.1080%252F00927870600860791'); genRefLink(128, 'S0219498816500869BIB013', '000241360900014');

[14] 14. W. E. Clark, Twisted matrix units semigroup algebras, Duke Math. J.34 (1967) 417-424. genRefLink(16, 'S0219498816500869BIB014', '10.1215%252FS0012-7094-67-03446-1'); genRefLink(128, 'S0219498816500869BIB014', 'A1967A084900005');

[15] 15. P. M. Cohn, A Morita context related to finite automorphism groups of rings, Pacific J. Math.98(1) (1982) 37-54. genRefLink(16, 'S0219498816500869BIB015', '10.2140%252Fpjm.1982.98.37'); genRefLink(128, 'S0219498816500869BIB015', 'A1982NE24200004');

[16] 16. P. M. Cohn, Free Rings and Their Relations, 2nd edn. (Academic Press, London, 1985). · Zbl 0659.16001

[17] 17. P. M. Cohn, Reversible rings, Bull. London Math. Soc.31(6) (1999) 641-648. genRefLink(16, 'S0219498816500869BIB017', '10.1112%252FS0024609399006116'); genRefLink(128, 'S0219498816500869BIB017', '000083872300001');

[18] 18. I. G. Connell, On the group ring, Canad. J. Math.15 (1963) 650-685. genRefLink(16, 'S0219498816500869BIB018', '10.4153%252FCJM-1963-067-0'); genRefLink(128, 'S0219498816500869BIB018', 'A19638055A00005');

[19] 19. G. A. Elliott and P. Ribenboim, Fields of generalized power series, Arch. Math.54 (1990) 365-371. genRefLink(16, 'S0219498816500869BIB019', '10.1007%252FBF01189583'); genRefLink(128, 'S0219498816500869BIB019', 'A1990DC39600007');

[20] 20. S. P. Farbman, The unique product property of groups and their amalgamated free products, J. Algebra178(3) (1995) 962-990. genRefLink(16, 'S0219498816500869BIB020', '10.1006%252Fjabr.1995.1385'); genRefLink(128, 'S0219498816500869BIB020', 'A1995TM53300013');

[21] 21. D. E. Fields, Zero divisors and nilpotent elements in power series rings, Proc. Amer. Math. Soc.27(3) (1971) 427-433. genRefLink(16, 'S0219498816500869BIB021', '10.1090%252FS0002-9939-1971-0271100-6'); genRefLink(128, 'S0219498816500869BIB021', 'A1971I815300001');

[22] 22. J. W. Fisher and S. Montgomery, Semiprime skew group rings, J. Algebra52(1) (1978) 241-247. genRefLink(16, 'S0219498816500869BIB022', '10.1016%252F0021-8693%252878%252990272-7'); genRefLink(128, 'S0219498816500869BIB022', 'A1978FB75800014');

[23] 23. Gilmer and T. Parker, Zero divisors in power series rings, J. Reine Angew. Math.278/279 (1975) 145-164. · Zbl 0309.13009

[24] 24. E. Hashemi, Quasi-Armendariz rings relative to a monoid, J. Pure Appl. Algebra2 (2007) 374-382. genRefLink(16, 'S0219498816500869BIB024', '10.1016%252Fj.jpaa.2007.01.018'); genRefLink(128, 'S0219498816500869BIB024', '000248630100005');

[25] 25. E. Hashemi and A. Moussavi, Polynomial extensions of quasi-Baer rings, Acta Math. Hungar.107(3) (2005) 207-224. genRefLink(16, 'S0219498816500869BIB025', '10.1007%252Fs10474-005-0191-1'); genRefLink(128, 'S0219498816500869BIB025', '000229328100004');

[26] 26. Y. Hirano, On annihilator ideals of a polynomial ring over a noncommutative ring, J. Pure Appl. Algebra168 (2002) 45-52. genRefLink(16, 'S0219498816500869BIB026', '10.1016%252FS0022-4049%252801%252900053-6'); genRefLink(128, 'S0219498816500869BIB026', '000173784700004');

[27] 27. C. Y. Hong, N. K. Kim and T. K. Kwak, Ore extensions of Baer and p.p.-rings, J. Pure Appl. Algebra151 (2000) 215-226. genRefLink(16, 'S0219498816500869BIB027', '10.1016%252FS0022-4049%252899%252900020-1'); genRefLink(128, 'S0219498816500869BIB027', '000089040000001');

[28] 28. C. Y. Hong, N. K. Kim and Y. Lee, Extensions of McCoy's theorem, Glasg. Math. J.52(1) (2010) 155-159. genRefLink(16, 'S0219498816500869BIB028', '10.1017%252FS0017089509990243'); genRefLink(128, 'S0219498816500869BIB028', '000273383200012');

[29] 29. C. Y. Hong, N. K. Kim and Y. Lee, Skew polynomial rings over semiprime rings, J. Korean Math. Soc.47(5) (2010) 879-897. genRefLink(16, 'S0219498816500869BIB029', '10.4134%252FJKMS.2010.47.5.879'); genRefLink(128, 'S0219498816500869BIB029', '000281530500001'); · Zbl 1207.16028

[30] 30. D. A. Jordan, Bijective extensions of injective ring endomorphisms, J. London Math. Soc.25(2) (1982) 435-448. genRefLink(16, 'S0219498816500869BIB030', '10.1112%252Fjlms%252Fs2-25.3.435'); · Zbl 0486.16002

[31] 31. J. W. Kerr, The polynomial ring over a Goldie ring need not be a Goldie ring, J. Algebra134 (1990) 344-352. genRefLink(16, 'S0219498816500869BIB031', '10.1016%252F0021-8693%252890%252990057-U'); genRefLink(128, 'S0219498816500869BIB031', 'A1990EE56700005');

[32] 32. N. K. Kim and Y. Lee, Armendariz rings and reduced rings, J. Algebra223 (2000) 477-488. genRefLink(16, 'S0219498816500869BIB032', '10.1006%252Fjabr.1999.8017'); genRefLink(128, 'S0219498816500869BIB032', '000085163600005');

[33] 33. J. Krempa, Some examples of reduced rings, Algebra Colloq.3(4) (1996) 289-300. · Zbl 0859.16019

[34] 34. T. K. Kwak and Y. Lee, Reflexive property of rings, Comm. Algebra40 (2012) 1576-1594. genRefLink(16, 'S0219498816500869BIB034', '10.1080%252F00927872.2011.554474'); genRefLink(128, 'S0219498816500869BIB034', '000304276200026');

[35] 35. T. Y. Lam, A First Course in Noncommutative Rings, Vol. 131 (Springer, New York, 1991). genRefLink(16, 'S0219498816500869BIB035', '10.1007%252F978-1-4684-0406-7'); · Zbl 0728.16001

[36] 36. T. Y. Lam, Lectures on Modules and Rings, Graduate Texts in Mathematics, Vol. 89 (Springer, New York, 1999). genRefLink(16, 'S0219498816500869BIB036', '10.1007%252F978-1-4612-0525-8');

[37] 37. A. Leroy and J. Matczuk, Goldie conditions for Ore extensions over semiprime rings, Algebra Represent. Theory8(5) (2005) 679-688. genRefLink(16, 'S0219498816500869BIB037', '10.1007%252Fs10468-005-0707-y'); genRefLink(128, 'S0219498816500869BIB037', '000233367200004');

[38] 38. Z. K. Liu, Endomorphism rings of modules of generalized inverse polynomials, Comm. Algebra28(2) (2000) 803-814. genRefLink(16, 'S0219498816500869BIB038', '10.1080%252F00927870008826861'); genRefLink(128, 'S0219498816500869BIB038', '000085297700019');

[39] 39. Z. K. Liu, Triangular matrix representations of rings of generalized power series, Acta Math. Sinica (English Series)22 (2006) 989-998. genRefLink(16, 'S0219498816500869BIB039', '10.1007%252Fs10114-005-0555-z'); genRefLink(128, 'S0219498816500869BIB039', '000239319400003');

[40] 40. Z. K. Liu and Z. Wenhui, Quasi-Armendariz rings relative to a monoid, Comm. Algebra36(3) (2008) 928-947. genRefLink(16, 'S0219498816500869BIB040', '10.1080%252F00927870701776920'); genRefLink(128, 'S0219498816500869BIB040', '000254393300008');

[41] 41. Z. Liu and R. Zhao, A generalization of PP-rings and p.q.-Baer rings, Glasg. Math. J.48(2) (2006) 217-229. genRefLink(16, 'S0219498816500869BIB041', '10.1017%252FS0017089506003016'); genRefLink(128, 'S0219498816500869BIB041', '000202990500004');

[42] 42. A. Majidinya, A. Moussavi and K. Paykan, Rings in which the annihilator of an ideal is pure, to appear in Algebra Colloq. · Zbl 1345.16007

[43] 43. G. Marks, R. Mazurek and M. Ziembowski, A new class of unique product monoids with applications to ring theory, Semigroup Forum78(2) (2009) 210-225. genRefLink(16, 'S0219498816500869BIB043', '10.1007%252Fs00233-008-9063-7'); genRefLink(128, 'S0219498816500869BIB043', '000264177800003');

[44] 44. G. Marks, R. Mazurek and M. Ziembowski, A unified approach to various generalizations of Armendariz rings, Bull. Aust. Math. Soc.81 (2010) 361-397. genRefLink(16, 'S0219498816500869BIB044', '10.1017%252FS0004972709001178'); genRefLink(128, 'S0219498816500869BIB044', '000278156700002'); · Zbl 1198.16025

[45] 45. G. Mason, Reflexive ideals, Comm. Algebra9 (1981) 1709-1724. genRefLink(16, 'S0219498816500869BIB045', '10.1080%252F00927878108822678 genRefLink(128, 'S0219498816500869BIB045', 'A1981MM42500004');

[46] 46. R. Mazurek and M. Ziembowski, On Neumann regular rings of skew generalized power series, Comm. Algebra36(5) (2008) 1855-1868. genRefLink(16, 'S0219498816500869BIB046', '10.1080%252F00927870801941150'); genRefLink(128, 'S0219498816500869BIB046', '000257139800019');

[47] 47. N. H. McCoy, Annihilators in polynomial rings, Amer. Math. Monthly64 (1957) 28-29. genRefLink(16, 'S0219498816500869BIB047', '10.2307%252F2309082'); · Zbl 0077.25903

[48] 48. S. Montgomery, Outer automorphisms of semi-prime rings, J. London Math. Soc.18(2) (1978) 209-220. genRefLink(16, 'S0219498816500869BIB048', '10.1112%252Fjlms%252Fs2-18.2.209'); · Zbl 0394.16025

[49] 49. A. Moussavi, H. Haj Seyyed Javadi and E. Hashemi, Generalized quasi-Baer rings, Comm. Algebra33(7) (2005) 2115-2129. genRefLink(16, 'S0219498816500869BIB049', '10.1081%252FAGB-200063514'); genRefLink(128, 'S0219498816500869BIB049', '000230757200004');

[50] 50. A. R. Nasr-Isfahani and A. Moussavi, On weakly rigid rings. Glasg. Math. J.51(3) (2009) 425-440. genRefLink(16, 'S0219498816500869BIB050', '10.1017%252FS0017089509005084'); genRefLink(128, 'S0219498816500869BIB050', '000269786100001');

[51] 51. D. S. Passman, The Algebraic Structure of Group Rings (Wiley-Interscience, New York, 1977). · Zbl 0368.16003

[52] 52. K. Paykan, A. Moussavi and M. Zahiri, Special properties of rings of skew generalized power series, Comm. Algebra42(12) (2014) 5224-5248. genRefLink(16, 'S0219498816500869BIB052', '10.1080%252F00927872.2013.836532'); genRefLink(128, 'S0219498816500869BIB0 '000337937700011');

[53] 53. A. Pollingher and A. Zaks, On Baer and quasi-Baer rings, Duke Math. J.37 (1970) 127-138. genRefLink(16, 'S0219498816500869BIB053', '10.1215%252FS0012-7094-70-03718-X'); genRefLink(128, 'S0219498816500869BIB053', 'A1970F983200018');

[54] 54. M. B. Rege and S. Chhawchharia, Armendariz rings, Proc. Japan Acad. Ser. A Math. Sci.73 (1997) 14-17. genRefLink(16, 'S0219498816500869BIB054', '10.3792%252Fpjaa.73.14'); · Zbl 0960.16038

[55] 55. P. Ribenboim, Special properties of generalized power series, J. Algebra173 (1995) 566-586. genRefLink(16, 'S0219498816500869BIB055', '10.1006%252Fjabr.1995.1103'); genRefLink(128, 'S0219498816500869BIB055', 'A1995QW96300005');

[56] 56. P. Ribenboim, Some examples of valued fields, J. Algebra173 (1995) 668-678. genRefLink(16, 'S0219498816500869BIB056', '10.1006%252Fjabr.1995.1108'); genRefLink(128, 'S0219498816500869BIB056', 'A1995QW96300010');

[57] 57. P. Ribenboim, Semisimple rings and von Neumann regular rings of generalized power series, J. Algebra198 (1997) 327-338. genRefLink(16, 'S0219498816500869BIB057', '10.1006%252Fjabr.1997.7063'); genRefLink(128, 'S0219498816500869BIB057', '000071408600001');

[58] 58. B. Stenstrom, Rings of Quotients (Springer, 1975). genRefLink(16, 'S0219498816500869BIB058', '10.1007%252F978-3-642-66066-5');

[59] 59. H. Tominaga, On s-unital rings, Math. J. Okayama Univ.18(2) (1976) 117-134. · Zbl 0335.16020

[60] 60. A. A. Tuganbaev, Some ring and module properties of skew Laurent series, in Formal Power Series and Algebraic Combinatorics (Moscow) (Springer, Berlin, 2000), pp. 613-622. genRefLink(16, 'S0219498816500869BIB060', '10.1007%252F978-3-662-04166-6_60'); · Zbl 0997.16033

Majidinya, A.; **Moussavi, A.**
Weakly principally quasi-Baer rings. (English) Zbl 1343.16001
J. Algebra Appl. 15, No. 1, Article ID 1650002, 20 p. (2016).

Let R be a ring with 1. An idempotent e is called left (respectively, right) semicentral if $xe = exe$ (respectively, $ex = exe$) for all $x \in R$. An ideal I of R is called right s-unital by right semicentral idempotents if for every $x \in I$, $xe = x$ for some right semicentral idempotent $e \in I$, and R is called weakly principally quasi-Baer (= weakly p.q.-Baer) if the left annihilator $l_R(Ra)$ of Ra in R for all $a \in R$ is right s-unital by right semicentral idempotents.

The authors show some properties and characterizations of a weakly p.q.-Baer ring. The following statements are equivalent: (1) R is weakly p.q.-Baer. (2) For every finitely generated left ideal I of R, $l_R(I)$ is right s-unital by right semicentral idempotents. (3) For every principal ideal I of R, $l_R(I)$ is right s-unital by right semicentral idempotents. (4) For every finitely generated ideal I of R, $l_R(I)$ is right s-unital by right semicentral idempotents. (5) The upper triangular matrix ring of order n is a weakly p.q.-Baer ring for a positive integer n. (6) $R[x]$ is a weakly p.q.-Baer ring.

It is also shown that the weakly p.q.-Baer condition is a Morita invariant property. Moreover, for a prime ideal P of a weakly p.q.-Baer ring R, let $O(P) = \{x \in R \mid aRs = 0 \text{ for some } s \notin P\}$ and $\overline{O}(P) = \{x \in R \mid x^n \in O(P) \text{ for some } n \in N\}$. Then equivalent conditions are given for R such that every prime ideal contains a unique minimal prime ideal, and when $O(P) \neq 0$ for every minimal prime ideal P of R, R has a nontrivial representation as a subdirect product of the right ring of fractions $R[S_P^{-1}]$ where $S_P = \{e \mid e \notin P \text{ is a left semicentral idempotent}\}$ and P ranges through all minimal prime ideals.

Reviewer: George Szeto (Peoria)

MSC:

16D40	Free, projective, and flat modules and ideals in associative algebras
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16P60	Chain conditions on annihilators and summands: Goldie-type conditions
16D25	Ideals in associative algebras
16S36	Ordinary and skew polynomial rings and semigroup rings
16N60	Prime and semiprime associative rings
16U80	Generalizations of commutativity (associative rings and algebras)
16S90	Torsion theories; radicals on module categories (associative algebraic aspects)

Cited in **1** Review
Cited in **4** Documents

Keywords:

weakly p.q.-Baer rings; left APP rings; principally p.q.-Baer rings; PP-rings; annihilators; minimal prime ideals; ring direct summands; right s-unital ideals; semicentral idempotents

Full Text: DOI

References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[2] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052
[3] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865
[4] DOI: 10.1006/jabr.2000.8328 · Zbl 0964.16031 · doi:10.1006/jabr.2000.8328
[5] DOI: 10.1017/S0017089500032547 · Zbl 0903.16002 · doi:10.1017/S0017089500032547
[6] DOI: 10.1017/S0004972700022000 · Zbl 0952.16009 · doi:10.1017/S0004972700022000
[7] DOI: 10.1090/conm/259/04088· doi:10.1090/conm/259/04088
[8] DOI: 10.1016/S0022-4049(99)00164-4 · Zbl 0947.16018 · doi:10.1016/S0022-4049(99)00164-4
[9] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[10] DOI: 10.1023/A:1022873808997 · Zbl 1066.16018 · doi:10.1023/A:1022873808997
[11] DOI: 10.1216/rmjm/1181070024 · Zbl 1035.16024 · doi:10.1216/rmjm/1181070024
[12] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8
[13] DOI: 10.1017/S0027763000002208 · Zbl 0113.02901 · doi:10.1017/S0027763000002208
[14] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[15] Dauns J., Mem. Amer. Math. Soc. 83 (1968)
[16] DOI: 10.1017/S0027763000002129 · Zbl 0117.02203 · doi:10.1017/S0027763000002129
[17] Goodearl K. R., Von Neumann Regular Rings (1991)
[18] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[19] DOI: 10.1090/S0002-9904-1972-12899-4 · Zbl 0237.16018 · doi:10.1090/S0002-9904-1972-12899-4
[20] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[21] DOI: 10.1112/plms/s3-13.1.31 · Zbl 0108.04004 · doi:10.1112/plms/s3-13.1.31
[22] DOI: 10.4153/CMB-1971-063-7 · Zbl 0217.34004 · doi:10.4153/CMB-1971-063-7

[23] DOI: 10.2140/pjm.1972.41.459 · Zbl 0207.04804 · doi:10.2140/pjm.1972.41.459
[24] DOI: 10.1007/978-1-4612-0525-8· doi:10.1007/978-1-4612-0525-8
[25] DOI: 10.4153/CMB-1971-065-1 · Zbl 0217.34005 · doi:10.4153/CMB-1971-065-1
[26] DOI: 10.1017/S0017089506003016 · Zbl 1110.16003 · doi:10.1017/S0017089506003016
[27] DOI: 10.1080/00927872.2011.636414 · Zbl 1300.16002 · doi:10.1080/00927872.2011.636414
[28] McCoy N. H., The Theory of Rings (1973) · Zbl 0273.16001
[29] DOI: 10.1007/BF01111594 · Zbl 0215.38102 · doi:10.1007/BF01111594
[30] Nasr-Isfahani A. R., J. Algebra Appl. 9 pp 1– (2008)
[31] Pierce R. S., Mem. Amer. Math. Soc. 70 (1967)
[32] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[33] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[34] DOI: 10.1081/AGB-120027854 · Zbl 1072.16007 · doi:10.1081/AGB-120027854
[35] DOI: 10.1090/S0002-9947-1973-0338058-9· doi:10.1090/S0002-9947-1973-0338058-9
[36] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3
[37] DOI: 10.1007/978-3-642-66066-5· doi:10.1007/978-3-642-66066-5
[38] DOI: 10.2140/pjm.1970.32.249 · Zbl 0191.31903 · doi:10.2140/pjm.1970.32.249
[39] DOI: 10.1006/jabr.1994.1309 · Zbl 0821.16045 · doi:10.1006/jabr.1994.1309
[40] DOI: 10.1080/00927879408824868 · Zbl 0803.16030 · doi:10.1080/00927879408824868
[41] Tominaga H., Math. J. Okayama Univ. 18 pp 117– (1976)

Amirzadeh Dana, P.; **Moussavi, A.**
Endo-principally quasi-Baer modules. (English) Zbl 1343.16005
J. Algebra Appl. 15, No. 2, Article ID 1550132, 19 p. (2016).

Let R be a ring with 1, M a right R-module and $S = \mathrm{End}_R(M)$. Then M is called an endo-principally quasi-Baer module (= endo-p.q.-Baer) if for every $m \in M$, the left annihilator of Sm in S is Se for some $e^2 = e \in S$. A ring R is called left p.q.-Baer if the left annihilator of any left principal ideal of R is Re for some $e^2 = e \in R$.

The following statements are equivalent: (1) R is a left p.q.-Baer ring. (2) Every free right R-module is an endo-p.q.-Baer module. (3) Every projective right R-module is an endo-p.q.-Baer module.

A module M is called an endo-principally extending module if for every $m \in M$, there is an idempotent $e \in S$ such that the submodule of M spanned by Sm is essential in eM, an $(FT\text{-}K)$-nonsingular module if for any invariant ideal I of S such that the right annihilator of I in M, $r_M(I)$ essential in eM, $r_M(I) = eM$, and $(FT\text{-}K)$-cononsingular if for any invariant submodule N of a direct summand of M and N' an invariant submodule of N such that $\varphi(N') \neq 0$ for every $\varphi \in \mathrm{End}_R(N)$ implies N' essential in N. Then every $(FT\text{-}K)$-nonsingular endo-principal extending module is endo-p.q.-Baer, and every $(FT\text{-}K)$-cononsingular endo-p.q.-Baer module is an endo-principally extending module. Moreover, it is shown that $\mathrm{End}_R(M)$ is a left p.q.-Baer ring if M is an endo-p.q.-Baer module and $\mathrm{End}_R(M)$ has no infinite set of nonzero orthogonal right semicentral idempotents e (that is, $er = ere$ for each $r \in R$).

Reviewer: George Szeto (Peoria)

MSC:

16D80 Other classes of modules and ideals in associative algebras
16D40 Free, projective, and flat modules and ideals in associative algebras
16D70 Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)
16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Cited in **3** Documents

Keywords:

quasi-Baer rings; quasi-Baer modules; endo-p.q.-Baer modules; extending modules; FI-extending modules; endomorphism rings; annihilators; semicentral idempotents

Full Text: DOI

References:

[1] DOI: 10.1006/jabr.2000.8328 · Zbl 0964.16031 · doi:10.1006/jabr.2000.8328

[2] DOI: 10.1017/S0004972700022000 · Zbl 0952.16009 · doi:10.1017/S0004972700022000

[3] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4

[4] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[5] DOI: 10.1081/AGB-120013220 · Zbl 1005.16005 · doi:10.1081/AGB-120013220

[6] DOI: 10.1016/j.jalgebra.2006.06.034 · Zbl 1161.16002 · doi:10.1016/j.jalgebra.2006.06.034

[7] DOI: 10.1112/jlms/s2-21.3.434 · Zbl 0432.16017 · doi:10.1112/jlms/s2-21.3.434

[8] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[9] Dung N. V., Extending Modules (1994) · Zbl 0841.16001

[10] DOI: 10.2307/1969540 · Zbl 0042.12402 · doi:10.2307/1969540

[11] Kaplansky I., Rings of Operators (1968) · Zbl 0174.18503

[12] DOI: 10.1016/0021-8693(79)90346-6 · Zbl 0399.16014 · doi:10.1016/0021-8693(79)90346-6

[13] DOI: 10.1007/978-1-4612-0525-8· doi:10.1007/978-1-4612-0525-8

[14] DOI: 10.1007/978-1-4419-8616-0· doi:10.1007/978-1-4419-8616-0

[15] DOI: 10.1080/00927872.2010.507232 · Zbl 1217.16003 · doi:10.1080/00927872.2010.507232

[16] Liu Q., Nanjing Daxue Xuebao Shuxue Bannian Kan 23 pp 157– (2006)

[17] Liu Q., J. Math. Res. Exposition 29 pp 823– (2009)

[18] DOI: 10.1081/AGB-120027854 · Zbl 1072.16007 · doi:10.1081/AGB-120027854

[19] DOI: 10.1142/9789812701671_0021· doi:10.1142/9789812701671$_0$021

[20] DOI: 10.1080/00927870701404374 · Zbl 1154.16005 · doi:10.1080/00927870701404374

[21] DOI: 10.1016/j.jalgebra.2008.10.002 · Zbl 1217.16009 · doi:10.1016/j.jalgebra.2008.10.002

[22] Rowen L. H., Ring Theory I (1988) · Zbl 0651.16001

[23] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3

[24] Ungor B., Albanian J. Math. 5 pp 165– (2011)

[25] DOI: 10.1007/BF01351889 · Zbl 0103.02202 · doi:10.1007/BF01351889

Padashnik, F.; **Moussavi, A.**; **Mousavi, H.**

S-Noetherian generalized power series rings. arXiv:1605.09132

Preprint, arXiv:1605.09132 [math.RA] (2016).

Summary: Let R be a ring with identity, (M;≤)$acommutativepositivestrictlyorderedmonoidandw_manautomorphismfore$
$M.Theskewgeneralizedpowerseriesring R[[M,w]]isacommongeneralizationof(skew)polynomialrings,(skew)powerser$
$Risamultiplicativeset,thenRiscalledright S-Noetherian,ifforeachideal I of R, Is \subseteq J \subseteq I forsome \in$
$Sandsomefinitelygeneratedrightideal J.Unifyingandgeneralizinganumberofknownresults,westudytransfersof S-$
$Noetherianpropertytothering R[[M,w]].Wealsoshowthatthering R[[M,w]]isleftNoetherianifandonlyif RisleftNoether$
$Risa-anti-Archimedeanmultiplicativesetwithaanautomorphismof R,then Risright S-Noetherianifandonlyiftheske$
$Noetherian.$

Full Text: arXiv OA License

Padashnik, F.; **Moussavi, A.**; **Mousavi, H.**
The ascending chain condition for principal left or right ideals of skew generalized power series rings. arXiv:1601.05830
Preprint, arXiv:1601.05830 [math.RA] (2016).

Summary: Let R be a ring, $(S, \leq)$ a strictly ordered monoid and $\omega : S \to End(R)$ a monoid homomorphism. In this paper we study the ascending chain conditions on principal left (resp. right) ideals of the skew generalized power series ring $R[[S, \omega]]$. Among other results, it is shown that $R[[S, \omega]]$ is a right archimedean reduced ring if S is an Artinian strictly totally ordered monoid, R is a right archimedean and S-rigid ring which satisfies the ACC on annihilators and ω_s preserves nonunits of R for each $s \in S$. As a consequence we deduce that the power series rings, Laurent series rings, skew power series rings, skew Laurent series rings and generalized power series rings are reduced satisfying the ascending chain condition on principal left (or right) ideals. It is also proved that, the skew Laurent polynomial ring $R[x, x^{-1}; \alpha]$ satisfies *ACCPL(R)*, if R is α-rigid and satisfies *ACCPL(R)* and the *ACC* on left(resp. right) annihilators. Examples are provided to illustrate and delimit our results.

MSC:

16D15	1-sided ideals (MSC2000)
16D40	Free, projective, and flat modules and ideals in associative algebras
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Full Text: arXiv OA License

Majidinya, A.; **Moussavi, A.**; **Paykan, K.**
Rings in which the annihilator of an ideal is pure. (English) Zbl 1345.16007
Algebra Colloq. 22, Spec. Iss. 1, 947-968 (2015).

Summary: A ring R is a left AIP-ring if the left annihilator of any ideal of R is pure as a left ideal. Equivalently, R is a left AIP-ring if R modulo the left annihilator of any ideal is flat. This class of rings includes both right PP-rings and right p.q.-Baer rings (and hence the biregular rings) and is closed under direct products and forming upper triangular matrix rings. It is shown that, unlike the Baer or right PP conditions, the AIP property is inherited by polynomial extensions and has the advantage that it is a Morita invariant property. We also give a complete characterization of a class of AIP-rings which have a sheaf representation. Connections to related classes of rings are investigated and several examples and counterexamples are included to illustrate and delimit the theory.

MSC:

16D80	Other classes of modules and ideals in associative algebras
16D40	Free, projective, and flat modules and ideals in associative algebras
16P60	Chain conditions on annihilators and summands: Goldie-type conditions
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)

Keywords:

AIP-rings; p.q.-Baer ring; s-unital ideals; pure annihilators; PP-rings

Full Text: DOI
References:

[1] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052
[2] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865
[3] DOI: 10.1017/S0017089500032547 · Zbl 0903.16002 · doi:10.1017/S0017089500032547

[4] DOI: 10.1016/S0022-4049(99)00164-4 · Zbl 0947.16018 · doi:10.1016/S0022-4049(99)00164-4
[5] Birkenmeier G.F., Kyungpook Math. J. 40 pp 247– (2000)
[6] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[7] DOI: 10.1023/A:1022873808997 · Zbl 1066.16018 · doi:10.1023/A:1022873808997
[8] DOI: 10.1216/rmjm/1181070024 · Zbl 1035.16024 · doi:10.1216/rmjm/1181070024
[9] DOI: 10.1093/qmath/28.1.41 · Zbl 0345.16012 · doi:10.1093/qmath/28.1.41
[10] DOI: 10.1017/S0027763000002208 · Zbl 0113.02901 · doi:10.1017/S0027763000002208
[11] DOI: 10.1017/S0017089500009253 · Zbl 0709.16007 · doi:10.1017/S0017089500009253
[12] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[13] DOI: 10.1017/S0027763000002129 · Zbl 0117.02203 · doi:10.1017/S0027763000002129
[14] DOI: 10.1081/AGB-120022787 · Zbl 1032.16003 · doi:10.1081/AGB-120022787
[15] Fraser J.A., Math. Japon. 34 pp 715– (1989)
[16] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1
[17] DOI: 10.1081/AGB-100002171 · Zbl 0996.16020 · doi:10.1081/AGB-100002171
[18] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[19] DOI: 10.1016/S0022-4049(01)00149-9 · Zbl 0994.16003 · doi:10.1016/S0022-4049(01)00149-9
[20] Jøndrup S., Math. Scand. 35 pp 16– (1974) · Zbl 0292.16017 · doi:10.7146/math.scand.a-11529
[21] DOI: 10.1112/plms/s3-13.1.31 · Zbl 0108.04004 · doi:10.1112/plms/s3-13.1.31
[22] DOI: 10.1090/S0002-9939-1974-0357466-X· doi:10.1090/S0002-9939-1974-0357466-X
[23] Liu Z., Sci. 33 (2) pp 305–
[24] Liu Z., Glasgow Math. J. 48 (2) pp 217–
[25] DOI: 10.1080/00927872.2011.636414 · Zbl 1300.16002 · doi:10.1080/00927872.2011.636414
[26] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[27] Ricart C.E., Math. 47 pp 528– (1946)
[28] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3
[29] Tominaga H., Math. J. Okayama Univ. 18 pp 117– (1976)

Moussavi, Ahmad; Paykan, Kamal
Zero divisor graphs of skew generalized power series rings. (English) Zbl 1332.16035
Commun. Korean Math. Soc. 30, No. 4, 363-377 (2015).

Summary: Let R be a ring, $(S,\leq)$ a strictly ordered monoid and $\omega\colon S\to \mathrm{End}(R)$ a monoid homomorphism. The skew generalized power series ring $R[[S,\omega]]$ is a common generalization of (skew) polynomial rings, (skew) power series rings, (skew) Laurent polynomial rings, (skew) group rings, and Mal'cev-Neumann Laurent series rings. In this paper, we investigate the interplay between the ring-theoretical properties of $R[[S,\omega]]$ and the graph-theoretical properties of its zero-divisor graph $\overline{\Gamma}(R[[S,\omega]])$. Furthermore, we examine the preservation of diameter and girth of the zero-divisor graph under extension to skew generalized power series rings.

MSC:

16W60	Valuations, completions, formal power series and related constructions (associative rings and algebras)	Cited in **3** Documents
16S36	Ordinary and skew polynomial rings and semigroup rings	
05C25	Graphs and abstract algebra (groups, rings, fields, etc.)	
05C12	Distance in graphs	

Keywords:

zero-divisor graphs; diameter; girth; skew generalized power series rings; skew power series rings; reduced rings

Full Text: DOI Link

Manaviyat, R.; **Moussavi, A.**
On annihilator ideals of pseudo-differential operator rings. (English) Zbl 1387.16018
Algebra Colloq. 22, No. 4, 607-620 (2015).

Summary: Let R be a ring with a derivation δ and $R((x^{-1};\delta))$ denote the pseudo-differential operator ring over R. We study the relations between the set of annihilators in R and the set of annihilators in $R((x^{-1};\delta))$. Among applications, it is shown that for an Armendariz ring R of pseudo-differential operator type, the ring $R((x^{-1};\delta))$ is Baer (resp., quasi-Baer, PP, right zip) if and only if R is a Baer (resp., quasi-Baer, PP, right zip) ring. For a δ-weakly rigid ring R, $R((x^{-1};\delta))$ is a left p.q.-Baer ring if and only if R is left p.q.-Baer and every countable subset of left semicentral idempotents of R has a generalized countable join in R.

MSC:

16S32 Rings of differential operators (associative algebraic aspects)
16S36 Ordinary and skew polynomial rings and semigroup rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

Cited in **2** Documents

Keywords:

pseudo-differential operator ring; annihilator ideal; Baer ring; quasi-Baer ring; Armendariz-like condition

Full Text: DOI

References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[2] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865
[3] Birkenmeier G.F., Kyungpook Math. J. 40 pp 247– (2000)
[4] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[5] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4
[6] DOI: 10.1080/00927879108824242 · Zbl 0733.16007 · doi:10.1080/00927879108824242
[7] Chase S.A., Nagoya Math. J. 18 pp 13– (1961) · Zbl 0113.02901 · doi:10.1017/S0027763000002208
[8] Cheng Y., Taiwan. J. Math. 12 (7) pp 1721– (2008)
[9] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[10] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9
[11] Fraser J.A., Math. Japonica 34 (5) pp 715– (1989)
[12] Gelfand I.M., Funct. Anal. Appl. 10 (4) pp 13– (1976)
[13] DOI: 10.1216/RMJ-1983-13-4-573 · Zbl 0532.16002 · doi:10.1216/RMJ-1983-13-4-573
[14] DOI: 10.1080/00927870008827058 · Zbl 0965.16015 · doi:10.1080/00927870008827058
[15] DOI: 10.1081/AGB-100002171 · Zbl 0996.16020 · doi:10.1081/AGB-100002171
[16] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1
[17] DOI: 10.1016/0021-8693(90)90057-U · Zbl 0719.16015 · doi:10.1016/0021-8693(90)90057-U
[18] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825
[19] DOI: 10.1080/00927870903045173 · Zbl 1202.16024 · doi:10.1080/00927870903045173
[20] DOI: 10.1080/00927872.2010.545962 · Zbl 1266.16020 · doi:10.1080/00927872.2010.545962
[21] DOI: 10.1080/00927870802104337 · Zbl 1154.16019 · doi:10.1080/00927870802104337
[22] DOI: 10.1017/S0017089509005084 · Zbl 1184.16026 · doi:10.1017/S0017089509005084
[23] DOI: 10.1142/S0219498812500703 · Zbl 1259.16033 · doi:10.1142/S0219498812500703
[24] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[25] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[26] Schur I., Berliner Math. Ges. 4 pp 2– (1905)
[27] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3

[28] Tominaga H., Math. J. Okayama Univ. 18 pp 117– (1976)

[29] Tuganbaev D.A., I Mat. Mekh.) 2000 (5) pp 55–

[30] DOI: 10.1090/S0002-9939-1976-0419512-6· doi:10.1090/S0002-9939-1976-0419512-6

Habibi, Mohammad; Moussavi, Ahmad

Special properties of a skew triangular matrix ring with constant diagonal. (English) Zbl 1343.16021

Asian-Eur. J. Math. 8, No. 3, Article ID 1550021, 10 p. (2015).

Let R be an associative ring with identity, σ an endomorphism of R with $\sigma(1) = 1$ and $n \geq 1$. The skew triangular matrix ring $S(R, n, \sigma)$ with constant main diagonal is the ring of $n \times n$ triangular matrices with multiplication $(a_{ij})(b_{ij}) = (c_{ij})$ where, for $i \leq j$,

$$c_{ij} = a_{ii}b_{ij} + a_{i,i+1}\sigma(b_{i+1,j}) + a_{i,i+2}\sigma^2(b_{i+2,j}) + \cdots + a_{i,j}\sigma^{j-i}(b_{jj}).$$

The authors study the transfer of a variety of conditions and properties between R and $S(R, n, \sigma)$. In many cases this is achieved via the constant diagonal element; for example, if J denotes the Jacobson radical, then $J(S(R, n, \sigma)) = \{(a_{ij}) \mid a_{11} \in J(R)\}$. It is shown that a number of algebraic properties is satisfied by the ring R if and only if also $S(R, n, \sigma)$ satisfies the property. Examples of such properties include semi-perfect, left Kasch, right zip and weak zip.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16S50 Endomorphism rings; matrix rings
16S36 Ordinary and skew polynomial rings and semigroup rings
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **2** Documents

Keywords:

skew triangular matrix rings; radicals, annihilator properties; zero-divisor properties

Full Text: DOI

References:

[1] 1. F. Cedó, Zip rings and Malcev domains, Comm. Algebra19(7) (1991) 1983-1991. genRefLink(16, 'S1793557115500217BIB1', '10.1080%252F00927879108824242'); genRefLink(128, 'S1793557115500217BIB1', 'A1991GC45800009');

[2] 2. J. Chen, X. Yang b and Y. Zhou, On strongly clean matrix and triangular matrix rings, Comm. Algebra34 (2006) 3659-3674. genRefLink(16, 'S1793557115500217BIB2', '10.1080%252F00927870600860791'); genRefLink(128, 'S1793557115500217BIB2', '000241360900014');

[3] 3. C. Faith, Rings with zero intersection property on annihilators: Zip rings, Publ. Math.33(2) (1989) 329-338. genRefLink(16, 'S1793557115500217BIB3', '10.5565%252FPUBLMAT_33289_09'); · Zbl 0702.16015

[4] 4. C. Y. Hong, N. K. Kim, Y. Lee and S. J. Ryu, Rings with Property (A) and their extensions, J. Algebra315(2) (2007) 612-628. genRefLink(16, 'S1793557115500217BIB4', '10.1016%252Fj.jalgebra.2007.01.042'); genRefLink(128, 'S1793557115500217BIB4', '000249556500009');

[5] 5. M. Ikeda, A characterization of quasi-Frobenius rings, Osaka J. Math.4 (1952) 203-209. · Zbl 0048.02501

[6] 6. T. Y. Lam, A First Course in Noncommutative Rings, Graduate Texts in Mathematics, Vol. 131 (Springer, New York, 1991). genRefLink(16, 'S1793557115500217BIB6', '10.1007%252F978-1-4684-0406-7'); · Zbl 0728.16001

[7] 7. T. Y. Lam, Lectures on Modules and Rings, Graduate Texts in Mathematics, Vol. 189 (Springer, New York, 1999). genRefLink(16, 'S1793557115500217BIB7', '10.1007%252F978-1-4612-0525-8');

[8] 8. L. Ouyang, Ore extensions of weak zip rings, Glasg. Math. J.51(3) (2009) 525-537. genRefLink(16, 'S1793557115500217BIB8', '10.1017%252FS0017089509005151'); genRefLink(128, 'S1793557115500217BIB8', '000269786100008');

[9] 9. G. Y. Shin, Prime ideals and sheaf representation of a pseudo symmetric rings, Trans. Amer. Math. Soc.184 (1973) 43-60. genRefLink(16, 'S1793557115500217BIB9', '10.1090%252FS0002-9947-1973-0338058-9'); genRefLink(128, 'S1793557115500217BIB9', 'A1973S005400003');

[10] 10. J. M. Zelmanowitz, The finite intersection property on annihilator right ideals, Proc. Amer. Math. Soc.57(2) (1976) 213-216. genRefLink(16, 'S1793557115500217BIB10', '10.1090%252FS0002-9939-1976-0419512-6'); genRefLink(128, 'S1793557115500217BIB10', 'A1976CD09500007');

Ahmadi, Morteza; **Moussavi, Ahmad**; **Nourozi, Vahid**
Nilradicals of skew Hurwitz series of rings. (English) Zbl 1329.16015
Matematiche 70, No. 1, 125-136 (2015).

The authors continue their study of the ring (HR,α) of skew Hurwitz series over a noncommutative ring R with identity; α is an endomorphism of R. This ring is a variant of the ring of formal power series and it is known to have interesting applications in differential algebra. – The main thrust of this paper is to describe the upper nilradical of (HR,α) in terms of the upper nilradical of the base ring R.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings

Cited in **1** Document

Keywords:

skew Hurwitz series rings; nil radical; prime radical

Full Text: Link

Habibi, M.; **Moussavi, A.**; **Alhevaz, A.**
On skew triangular matrix rings. (English) Zbl 1341.16029
Algebra Colloq. 22, No. 2, 271-280 (2015).

From the introduction: All rings considered in this paper are associative with identity. Let R be a ring with an endomorphism σ such that $\sigma(1)=1$. Consider the skew triangular matrix ring as a set of all triangular matrices with addition pointwise and a new multiplication subject to the condition $E_{ij}r=\sigma^{j-i}(r)E_{ij}$ for each elementary matrix E_{ij} with $r\in R$ and $i\leq j$. So $(a_{ij})(b_{ij})=(c_{ij})$, $c_{ij}=a_{ii}b_{ij}+a_{i,i+1}\sigma(b_{i+1,j})+\cdots+a_{ij}\sigma^{j-i}(b_{jj})$ for each $i\leq j$ and we denote it by $T_n(R,\sigma)$. The subring of the skew triangular matrices with constant main diagonal is denoted by $S(R,n,\sigma)$, and the subring of the skew triangular matrices with constant diagonals is denoted by $T(R,n,\sigma)$.

This paper investigates a variety of conditions and related properties that the skew matrix rings $S(R,n,\sigma)$ and $T(R,n,\sigma)$ might inherit from a ring R. These ring constructions will prove to be useful in ring theory for building examples and counterexamples, perhaps the most interesting class of non-semiprime rings. Our results generate new families of examples of rings (with zero-divisors) subject to a given condition. We show that many ring-theoretic properties of R like various Armendariz-type properties as well as the clean property are inherited by the rings $S(R,n,\sigma)$ and $T(R,n,\sigma)$. We also consider the quasi-Armendariz property of the rings $S(R,n,\sigma)$ and $T(R,n,\sigma)$. They allow the construction of rings with a non-zero nilpotent ideal of arbitrary index of nilpotency which have these properties. Throughout the paper we only handle the case $S(R,n,\sigma)$, and similar methods can be used for the ring $T(R,n,\sigma)$.

MSC:

16S50 Endomorphism rings; matrix rings
16S36 Ordinary and skew polynomial rings and semigroup rings

Cited in **3** Documents

Keywords:

quasi-Armendariz rings; clean rings; skew triangular matrix rings

Full Text: DOI
References:

[1] DOI: 10.1216/rmjm/1181069429 · Zbl 1131.13301 · doi:10.1216/rmjm/1181069429
[2] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274
[3] DOI: 10.1016/j.jalgebra.2008.01.019 · Zbl 1157.16007 · doi:10.1016/j.jalgebra.2008.01.019
[4] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[5] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[6] DOI: 10.1080/00927879808823655 · Zbl 0655.16006 · doi:10.1080/00927879808823655
[7] DOI: 10.1017/S0017089502030021· doi:10.1017/S0017089502030021
[8] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791
[9] DOI: 10.1017/S0013091505000404 · Zbl 1128.16030 · doi:10.1017/S0013091505000404
[10] DOI: 10.1142/S0219498812500806 · Zbl 1282.16032 · doi:10.1142/S0219498812500806
[11] Handam A.H., Int. Math. Forum 4 (21) pp 1007– (2009)
[12] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1
[13] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[14] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1
[15] DOI: 10.4134/BKMS.2007.44.4.641 · Zbl 1159.16023 · doi:10.4134/BKMS.2007.44.4.641
[16] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)
[17] DOI: 10.1081/AGB-200049869 · Zbl 1088.16021 · doi:10.1081/AGB-200049869
[18] DOI: 10.1080/00927870701776920 · Zbl 1143.15019 · doi:10.1080/00927870701776920
[19] Liu Z.K., Math. J. Okayama Univ. 52 pp 89– (2010)
[20] DOI: 10.1080/00927870600651398 · Zbl 1110.16026 · doi:10.1080/00927870600651398
[21] DOI: 10.1017/S0017089506003016 · Zbl 1110.16003 · doi:10.1017/S0017089506003016
[22] DOI: 10.1017/S0017089509005084 · Zbl 1184.16026 · doi:10.1017/S0017089509005084
[23] DOI: 10.1080/00927870902828561 · Zbl 1200.16038 · doi:10.1080/00927870902828561
[24] DOI: 10.1090/S0002-9947-1977-0439876-2· doi:10.1090/S0002-9947-1977-0439876-2
[25] DOI: 10.1080/00927879908826649 · Zbl 0946.16007 · doi:10.1080/00927879908826649
[26] Tominaga H., Math. J. Okayama Univ. 18 pp 117– (1976)
[27] DOI: 10.1007/BF01419573 · Zbl 0228.16012 · doi:10.1007/BF01419573
[28] DOI: 10.1081/AGB-200060531 · Zbl 1080.16027 · doi:10.1081/AGB-200060531

Ahmadi, M.; Moussavi, A.; Nourozi, V.
On skew Hurwitz serieswise Armendariz rings. (English) Zbl 1308.16033
Asian-Eur. J. Math. 7, No. 3, Article ID 1450036, 19 p. (2014).

Let R be an associative ring with unity and α an endomorphism of R. The ring of skew Hurwitz series over R, written as (HR,α), is the set of all functions $f\colon \mathbb{N}\to R$ with respect to componentwise addition and multiplication fg given by

$$(fg)(n)=\sum_{k=0}^{n}\binom{n}{k}f(k)\alpha^k(g(n-k))$$

for all $n\in\mathbb{N}$, $\mathbb{N}$ is the set of non-negative integers. The subring of all the functions with finite support is denoted by (hR,α).

Analogous to the concept of an Armendariz ring, the authors define and study skew Hurwitz serieswise Armendariz rings; the latter being commutative rings R for which $fg=0$ if and only if $f(n)g(m)=0$ for all n,m where $f,g\in HR$. For such a ring R, certain radicals of HR and hR are determined and it is shown that these two rings fulfill the Köthe conjecture (no nonzero nil ideals implies no nonzero one-sided nil ideals). The transfer of many properties, for example like being symmetric, reversible, prime and Baer, between R, HR and hR is also discussed.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

16S36 Ordinary and skew polynomial rings and semigroup rings

16N40 Nil and nilpotent radicals, sets, ideals, associative rings

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

16U80 Generalizations of commutativity (associative rings and algebras)

Cited in **7** Documents

Keywords:

skew Hurwitz series rings; skew Hurwitz serieswise Armendariz rings; radicals; Köthe conjecture; nil ideals

Full Text: DOI

References:

[1] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[2] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[3] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[4] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[5] DOI: 10.1112/S0024609399006116 · Zbl 1021.16019 · doi:10.1112/S0024609399006116

[6] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[7] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9

[8] Ferrero M., Math. J. Okayama Univ. 29 pp 119– (1987)

[9] Hashemi E., Acta Math. Hungar. 3 pp 207– (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[10] Hassanein A. M., Southeast Asian Bull. Math. 36 pp 81– (2012)

[11] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[12] DOI: 10.1142/S100538670600023X · Zbl 1095.16014 · doi:10.1142/S100538670600023X

[13] DOI: 10.1112/jlms/s2-10.3.281 · Zbl 0313.16011 · doi:10.1112/jlms/s2-10.3.281

[14] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503

[15] DOI: 10.2140/pjm.1975.59.99 · Zbl 0327.12104 · doi:10.2140/pjm.1975.59.99

[16] DOI: 10.1080/00927879708825957 · Zbl 0884.13013 · doi:10.1080/00927879708825957

[17] DOI: 10.1016/S0022-4049(98)00099-1 · Zbl 0978.12007 · doi:10.1016/S0022-4049(98)00099-1

[18] Krempa J., Algebra Colloq. 3 pp 289– (1996)

[19] Lam T. Y., A First Course in Noncommutative Rings (2000)

[20] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825

[21] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6

[22] DOI: 10.1080/00927870701718849 · Zbl 1142.16016 · doi:10.1080/00927870701718849

[23] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[24] DOI: 10.1090/S0002-9939-1976-0419512-6· doi:10.1090/S0002-9939-1976-0419512-6

Nasr-Isfahani, A. R.; Moussavi, A.

Ore extensions of Jacobson rings. (English) Zbl 1307.16025

J. Algebra 415, 234-246 (2014).

For a Jacobson ring R, it is well-known that $R[x]$ is a Jacobson ring, but this is not necessarily true for the skew polynomial extension $R[x;\alpha]$. For an automorphism α conditions are known when it will be the case. In this paper the authors consider this problem and add to the complexity by requiring that α is only a monomorphism and not necessarily surjective.

Fix a monomorphism $\alpha\colon R \to R$. An ideal I of R is called strongly α-prime if $\alpha^{-1}(I) = I$ and for all ideals B and C of R with $\alpha(C) \subseteq C$ and $BC \subseteq I$, it follows that $B \subseteq I$ or $C \subseteq I$. The ring R is called strongly α-prime if $\{0\}$ is a strongly α-prime ideal of R.

A ring R may satisfy the following conditions:

(A_1) For each strongly α-prime ideal I of R, $(R/I)[x;\alpha]$ is semiprimitive.

(A_2) For each strongly α-prime ideal I of R, R/I is semiprime.

(A_3) For each prime ideal P of $R[x;\alpha]$ with $x \notin P$, $x + P$ is a regular element of $R[x;\alpha]/P$.

The main result shows that if a Jacobson ring R satisfies these three conditions, then $R[x;\alpha]$ is a Jacobson ring. This result covers the known cases for this conclusion. It is also shown that any left Noetherian ring fulfills these three conditions.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N20 Jacobson radical, quasimultiplication
16P40 Noetherian rings and modules (associative rings and algebras)

Keywords:

Jacobson rings; Ore extensions

Full Text: DOI

References:

[1] Bergen, J.; Montgomery, S.; Passman, D. S., Radicals of crossed products of enveloping algebras, Israel J. Math., 59, 167-184 (1987) · Zbl 0637.17006

[2] El Ahmar, A., Anneaux de polynômes de Ore sur des anneaux de Jacobson, Rev. Roumaine Math. Pures Appl., 26, 10, 1277-1286 (1981), (in French) · Zbl 0494.16016

[3] Ferrero, M.; Parmenter, M. M., A note on Jacobson rings and polynomial rings, Proc. Amer. Math. Soc., 105, 281-286 (1989) · Zbl 0672.16004

[4] Goldie, A. W.; Michler, G. O., Ore extensions and polycyclic group rings, J. Lond. Math. Soc., 2, 9, 337-345 (1974) · Zbl 0294.16019

[5] Goodearl, K. R.; Letzter, E. S., Skew polynomial extensions of commutative Noetherian Jacobson rings, Proc. Amer. Math. Soc., 123, 6, 1673-1680 (1995) · Zbl 0839.16023

[6] Goodearl, K. R.; Warfield, R. B., An Introduction to Noncommutative Noetherian Rings, London Math. Soc. Stud. Texts, vol. 61 (2004), Cambridge University Press: Cambridge University Press Cambridge · Zbl 1101.16001

[7] Irving, R. S., Prime ideals of Ore extensions over commutative rings, J. Algebra, 56, 315-342 (1979) · Zbl 0399.16015

[8] Irving, R. S., Generic flatness and the Nullstellensatz for Ore extensions, Comm. Algebra, 7, 3, 259-277 (1979) · Zbl 0402.16002

[9] Jordan, D. A., Noetherian Ore extensions and Jacobson rings, J. Lond. Math. Soc., 2, 10, 281-291 (1975) · Zbl 0313.16011

[10] Lesieur, L., Conditions noethériennes dans l'anneau de polynômes de Ore \(A [X, \sigma, \delta]\), (Séminaire d'Algèbre Paul Dubreil, 30ème année. Séminaire d'Algèbre Paul Dubreil, 30ème année, Paris, 1976-1977. Séminaire d'Algèbre Paul Dubreil, 30ème année. Séminaire d'Algèbre Paul Dubreil, 30ème année, Paris, 1976-1977, Lecture Notes in Math., vol. 641 (1978), Springer: Springer Berlin), 220-234 · Zbl 0371.16015

[11] Mcconnell, J. C., The Nullstellensatz and Jacobson properties for rings of differential operators, J. Lond. Math. Soc., 2, 26, 37-42 (1982) · Zbl 0498.16022

[12] Moussavi, A., On the semiprimitivity of skew polynomial rings, Proc. Edinb. Math. Soc., 2, 169-178 (1993) · Zbl 0804.16029

[13] Mushrub, V. A., Endomorphisms and invariance of radicals of rings, (Algebra, Proc. Int. Conf. in Memory of A.I. Mal'cev. Algebra, Proc. Int. Conf. in Memory of A.I. Mal'cev, Novosibirsk/USSR, 1989. Algebra, Proc. Int. Conf. in Memory of A.I. Mal'cev. Algebra, Proc. Int. Conf. in Memory of A.I. Mal'cev, Novosibirsk/USSR, 1989, Contemp. Math., vol. 131 (1992)), 363-379, (in English) · Zbl 0770.16005

[14] Pearson, K. R.; Stephenson, W., A skew polynomial ring over a Jacobson ring need not be a Jacobson ring, Comm. Algebra, 5, 783-794 (1977) · Zbl 0355.16020

[15] Pearson, K. R.; Stephenson, W.; Watters, J. F., Skew polynomials and Jacobson rings, Proc. Lond. Math. Soc., 42, 559-576 (1981) · Zbl 0469.16002

[16] Watters, J. F., Polynomial extensions of Jacobson rings, J. Algebra, 36, 302-308 (1975) · Zbl 0309.16009

Paykan, K.; **Moussavi, A.**; **Zahiri, M.**

Special properties of rings of skew generalized power series. (English) Zbl 1297.16045

Commun. Algebra 42, No. 12, 5224-5248 (2014).

Summary: Let R be a ring, S a strictly ordered monoid, and $\omega\colon S \to \mathrm{End}(R)$ a monoid homomorphism. In [Bull. Aust. Math. Soc. 81, No. 3, 361-397 (2010; Zbl 1198.16025)] *G. Marks, R. Mazurek* and *M. Ziembowski* study the (S,ω)-Armendariz condition on R, a generalization of the standard Armendariz condition from polynomials to skew generalized power series. Following [loc. cit.], we provide various classes of nonreduced (S,ω)-Armendariz rings, and determine radicals of the skew generalized power series ring $R[[S^{\leq},\omega]]$, in terms of those of an (S,ω)-Armendariz ring R. We also obtain some characterizations for a skew generalized power series ring to be local, semilocal, clean, exchange, uniquely clean, 2-primal, or symmetric.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

16S36 Ordinary and skew polynomial rings and semigroup rings

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Keywords:

skew generalized power series rings; clean rings; exchange rings; local rings; nil radical; prime radical; 2-primal rings; Armendariz rings

Full Text: DOI

References:

[1] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[2] DOI: 10.1080/00927879908826596 · Zbl 0929.16032 · doi:10.1080/00927879908826596

[3] DOI: 10.1081/AGB-120004490 · Zbl 1083.13501 · doi:10.1081/AGB-120004490

[4] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[5] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[6] Birkenmeier , G. F. Heatherly , H. E. Lee , E. K. (1993). Completely prime ideals and associated radicals.Proceedings of Biennial Ohio State-Denison Conference 1992, Jain, S. K., Rizvi, S. T., eds. Singapore-New Jersey-London-HongKong: World Scientific, pp. 102–129 . · Zbl 0853.16022

[7] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[8] Cohn P. M., Free Rings and Their Relations,, 2. ed. (1985) · Zbl 0659.16001

[9] DOI: 10.1112/S0024609399006116 · Zbl 1021.16019 · doi:10.1112/S0024609399006116

[10] DOI: 10.1007/BF01189583 · Zbl 0676.13010 · doi:10.1007/BF01189583

[11] DOI: 10.1006/jabr.1995.1385 · Zbl 0847.20021 · doi:10.1006/jabr.1995.1385

[12] DOI: 10.1080/00927872.2011.623289 · Zbl 1269.16019 · doi:10.1080/00927872.2011.623289

[13] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[14] DOI: 10.4153/CJM-1964-074-0 · Zbl 0129.02004 · doi:10.4153/CJM-1964-074-0

[15] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[16] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[17] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[18] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)

[19] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7

[20] DOI: 10.4153/CMB-1971-065-1 · Zbl 0217.34005 · doi:10.4153/CMB-1971-065-1

[21] DOI: 10.4153/CJM-1969-098-x · Zbl 0182.36701 · doi:10.4153/CJM-1969-098-x

[22] Lee T. K., Houston J. Math. 29 (3) pp 583– (2003)

[23] DOI: 10.1081/AGB-120037221 · Zbl 1068.16037 · doi:10.1081/AGB-120037221

[24] DOI: 10.1080/00927879808826150 · Zbl 0901.16009 · doi:10.1080/00927879808826150

[25] DOI: 10.1016/0021-8693(74)90112-4 · Zbl 0277.16014 · doi:10.1016/0021-8693(74)90112-4

[26] DOI: 10.1080/00927870008826861 · Zbl 0949.16026 · doi:10.1080/00927870008826861

[27] DOI: 10.1081/AGB-120039287 · Zbl 1067.16064 · doi:10.1081/AGB-120039287

[28] DOI: 10.1007/s10114-005-0555-z · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[29] DOI: 10.1007/s00233-008-9063-7 · Zbl 1177.16030 · doi:10.1007/s00233-008-9063-7

[30] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[31] DOI: 10.1080/00927870801941150 · Zbl 1159.16032 · doi:10.1080/00927870801941150

[32] DOI: 10.1080/00927870902828561 · Zbl 1200.16038 · doi:10.1080/00927870902828561

[33] DOI: 10.1142/S0219498812500703 · Zbl 1259.16033 · doi:10.1142/S0219498812500703

[34] DOI: 10.1090/S0002-9947-1977-0439876-2· doi:10.1090/S0002-9947-1977-0439876-2

[35] DOI: 10.1017/S0017089504001727 · Zbl 1057.16007 · doi:10.1017/S0017089504001727

[36] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[37] DOI: 10.1006/jabr.1995.1103 · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103

[38] DOI: 10.1006/jabr.1995.1108 · Zbl 0846.12005 · doi:10.1006/jabr.1995.1108

[39] DOI: 10.1006/jabr.1997.7063 · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063

[40] Rowen L. H., Ring Theory I (1988) · Zbl 0651.16001

[41] DOI: 10.1006/jabr.2000.8451 · Zbl 0969.16006 · doi:10.1006/jabr.2000.8451

[42] DOI: 10.1007/978-3-662-04166-6_60· doi:10.1007/978-3-662-04166-6$_6$0

[43] DOI: 10.1007/BF01419573 · Zbl 0228.16012 · doi:10.1007/BF01419573

Majidinya, A.; **Moussavi, A.**

Principally quasi-Baer skew generalized power series modules. (English) Zbl 1291.16040

Commun. Algebra 42, No. 4, 1460-1472 (2014).

Summary: Let R be a ring and S a strictly totally ordered monoid. Let $\omega\colon S \to \mathrm{End}(R)$ be a monoid homomorphism. Let M_R be an ω-compatible module and either R satisfies the ascending chain conditions (ACC) on left annihilator ideals or every S-indexed subset of right semicentral idempotents in R has a generalized S-indexed join. We show that M_R is p.q.-Baer if and only if the generalized power series module $M[[S]]_{R[[S,\omega]]}$ is p.q.-Baer. As a consequence, we deduce that for an ω-compatible ring R, the skew generalized power series ring $R[[S,\omega]]$ is right p.q.-Baer if and only if R is right p.q.-Baer and either R satisfies the ACC on left annihilator ideals or any S-indexed subset of right semicentral idempotents in R has a generalized S-indexed join in R. Examples to illustrate and delimit the theory are provided.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

16S36 Ordinary and skew polynomial rings and semigroup rings

Keywords:

generalized power series modules; principally quasi-Baer rings; skew generalized power series rings; strictly ordered monoids; semicentral idempotents; right p.q.-Baer rings; ACC on left annihilator ideals

Full Text: DOI

References:

[1] Annin , S. (2002).Associated and Attached Primes Over Noncommutative Rings.Ph.D. thesis, University of California at Berkeley . · Zbl 1010.16025

[2] Başer M., Taiwanese J. Math. 11 pp 267– (2007)

[3] Bessenrodt , C. Brungs , H. H. Törner , G. (1990). Right chain rings. Part 1.Schriftenreihe des Fachbereichs Math.Vol. 181. Duisburg Univ . · Zbl 0539.16026

[4] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[5] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530

[6] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865

[7] Brewer J. W., Power Series Over Commutative Rings (1981) · Zbl 0476.13015

[8] Cheng Y., Taiwan. J. Math. 45 pp 469– (2008)

[9] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1

[10] Cohn P. M., Free Rings and Their Relations., 2. ed. (1985) · Zbl 0659.16001

[11] Fraser J. A., Math. Japonica 34 pp 715– (1989)

[12] Hashemi E., Stud. Scie. Math. Hungar. 45 pp 469– (2008)

[13] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[14] DOI: 10.4134/BKMS.2004.41.4.657 · Zbl 1065.16025 · doi:10.4134/BKMS.2004.41.4.657

[15] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503

[16] Krempa J., Algebra Colloq. 3 pp 289– (1996)

[17] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7

[18] Lee , T. K. Zhou , Y. (2004). Reduced modules, rings, modules, algebras, and abelian groups.Lecture Notes in Pure and Appl. Math.Vol. 236. Marcel Dekker, New York, pp. 365–377 . · Zbl 1075.16003

[19] DOI: 10.1017/S0017089509990255 · Zbl 1198.16023 · doi:10.1017/S0017089509990255

[20] DOI: 10.1017/S0017089506003016 · Zbl 1110.16003 · doi:10.1017/S0017089506003016

[21] DOI: 10.1007/s10114-005-0555-z · Zbl 1102.16027 · doi:10.1007/s10114-005-0555-z

[22] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825

[23] DOI: 10.1017/S0017089502030112· doi:10.1017/S0017089502030112

[24] DOI: 10.1080/00927870903045173 · Zbl 1202.16024 · doi:10.1080/00927870903045173

[25] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[26] DOI: 10.1080/00927870801941150 · Zbl 1159.16032 · doi:10.1080/00927870801941150

[27] DOI: 10.1016/j.jalgebra.2007.08.024 · Zbl 1152.16035 · doi:10.1016/j.jalgebra.2007.08.024

[28] DOI: 10.1016/j.jalgebra.2006.07.030 · Zbl 1107.16043 · doi:10.1016/j.jalgebra.2006.07.030

[29] DOI: 10.1142/S0219498808002771 · Zbl 1157.16008 · doi:10.1142/S0219498808002771

[30] DOI: 10.1006/jabr.1997.7063 · Zbl 0890.16004 · doi:10.1006/jabr.1997.7063

[31] DOI: 10.1006/jabr.1995.1103 · Zbl 0852.13008 · doi:10.1006/jabr.1995.1103

[32] DOI: 10.1016/0022-4049(92)90056-L · Zbl 0761.13007 · doi:10.1016/0022-4049(92)90056-L

[33] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091

[34] DOI: 10.1081/AGB-120027854 · Zbl 1072.16007 · doi:10.1081/AGB-120027854

[35] DOI: 10.1007/978-3-662-04166-6_60· doi:10.1007/978-3-662-04166-6$_6$0

[36] DOI: 10.1081/AGB-100000797 · Zbl 1005.16043 · doi:10.1081/AGB-100000797

[37] DOI: 10.1081/AGB-100001683 · Zbl 0988.16035 · doi:10.1081/AGB-100001683

[38] Zhao R., Taiwanese Journal Of Mathematics 15 pp 711– (2011)

[39] Zhao R., Taiwanese Journal Of Mathematics 12 pp 447– (2008)

Habibi, M.; **Moussavi, A.**

Annihilator properties of skew monoid rings. (English) Zbl 1297.16022

Commun. Algebra 42, No. 2, 842-852 (2014).

The authors study the transfer of properties between the unital associative ring R and the skew monoid ring $R[M;\sigma]$ where M is a certain monoid with $M^n = 0$ and σ is an endomorphism of R. We mention a few typical results.

R is left zip (resp. left Kasch; semiperfect) if and only if $R[M;\sigma]$ has the corresponding property. When σ is an automorphism, it is shown that R is left zip (resp. left mininjective; right mininjective; right Kasch) if and only if $R[M;\sigma]$ has the corresponding property (for the mininjectivity M is required to be the free monoid generated by $\{u\} \cup \{0\}$ with $u^n = 0$). An example is given to show that when the endomorphism σ is not injective, then $R[M;\sigma]$ can be left zip but R need not be.

The well-known nil radicals of $R[M;\sigma]$ are also determined. First it is shown that there is a one-to-one correspondence between the prime (resp. semiprime; completely prime; completely semiprime; maximal (left or right)) ideals of R and those of $R[M;\sigma]$. Then R will be a Jacobson ring if and only if $R[M;\sigma]$ is Jacobson. Moreover, if α denotes any one of the Wedderburn radical (sum of all nilpotent ideals), the lower nil radical (prime radical), the Levitzky radical (sum of all locally nilpotent ideals) or the upper nil radical (sum of all nil ideals), then $\alpha(R[M;\sigma]) = \left\{\sum_{g\in M} r_g g \in R[M;\sigma] \mid r_g \in \alpha(R)\right\}$.

Reviewer: Stefan Veldsman (Port Elizabeth)

MSC:

16S35	Twisted and skew group rings, crossed products
16N40	Nil and nilpotent radicals, sets, ideals, associative rings
16N80	General radicals and associative rings
16L60	Quasi-Frobenius rings
16W20	Automorphisms and endomorphisms
20M25	Semigroup rings, multiplicative semigroups of rings
16D25	Ideals in associative algebras
16P60	Chain conditions on annihilators and summands: Goldie-type conditions

Keywords:
skew monoid rings; zip rings; Kasch rings; quasi-Frobenius rings; nil radical; endomorphisms

Full Text: DOI

References:

[1] DOI: 10.1080/00927879108824242 · Zbl 0733.16007 · doi:10.1080/00927879108824242
[2] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791
[3] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9
[4] DOI: 10.1080/00927879108824235 · Zbl 0729.16015 · doi:10.1080/00927879108824235
[5] DOI: 10.1016/j.jalgebra.2007.01.042 · Zbl 1156.16001 · doi:10.1016/j.jalgebra.2007.01.042
[6] DOI: 10.2140/pjm.1979.83.375 · Zbl 0388.13001 · doi:10.2140/pjm.1979.83.375
[7] Ikeda M., Osaka J. Math. 4 pp 203– (1952)
[8] Kaplansky I., Commutative Rings (1970)
[9] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7
[10] DOI: 10.1007/978-1-4612-0525-8· doi:10.1007/978-1-4612-0525-8
[11] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6
[12] DOI: 10.1080/00927872.2010.520177 · Zbl 1262.16021 · doi:10.1080/00927872.2010.520177
[13] DOI: 10.1080/00927870902828561 · Zbl 1200.16038 · doi:10.1080/00927870902828561
[14] DOI: 10.1017/CBO9780511546525· doi:10.1017/CBO9780511546525
[15] DOI: 10.1017/S0017089509005151 · Zbl 1186.16017 · doi:10.1017/S0017089509005151

Alhevaz, A.; **Moussavi, A.**

On monoid rings over nil Armendariz ring. (English) Zbl 1300.16027

Commun. Algebra 42, No. 1, 1-21 (2014).

Let R be an associative unital ring and let M be a monoid. Denote by $\mathrm{nil}(R)$ the set of nilpotent elements of R. Then R is said to be a nil M-Armendariz ring if for any two elements $a = \sum_{i=1}^{m} \alpha_i g_i$ and $b = \sum_{j=1}^{n} \beta_j h_j$ in the monoid ring $R[M]$, with $\alpha_i, \beta_j \in R$, $g_i, h_j \in M$, it follows that $g_i h_j \in \mathrm{nil}(R)$ for all i, j whenever $ab \in \mathrm{nil}(R[M])$.

This new notion is a common generalization of the nil Armendariz property (whose definition is based on the polynomial ring $R[x]$) and of the M-Armendariz property, considered earlier by a number of authors. Some basic properties of nil M-Armendariz rings are studied, including behaviour of this property under certain ring constructions. Connections to some related notions are discussed and several examples are presented.

Reviewer: Jan Okniński (Warszawa)

MSC:

16S36	Ordinary and skew polynomial rings and semigroup rings	Cited in **4** Documents
20M25	Semigroup rings, multiplicative semigroups of rings	
16N40	Nil and nilpotent radicals, sets, ideals, associative rings	
16P60	Chain conditions on annihilators and summands: Goldie-type conditions	

Keywords:

monoid rings; nil Armendariz rings; nilpotent elements; polynomial rings; unique product monoids

Full Text: DOI

References:

[1] DOI: 10.1142/S021949881250079X · Zbl 1259.16032 · doi:10.1142/S021949881250079X
[2] DOI: 10.1080/00927872.2010.548842 · Zbl 1260.16024 · doi:10.1080/00927872.2010.548842
[3] Alhevaz A., Algebra Colloq. 19 (1) pp 821– (2012) · Zbl 1298.16024 · doi:10.1142/S1005386712000715
[4] DOI: 10.4153/CJM-1956-040-9 · Zbl 0072.02404 · doi:10.4153/CJM-1956-040-9
[5] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2
[6] Amitsur S. A., Colloq. Math. Soc. Janos Bolyai 6: Rings, Modules and Radicals, Keszthely (Hungary) pp 47– (1971)
[7] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274
[8] DOI: 10.1016/j.jalgebra.2008.01.019 · Zbl 1157.16007 · doi:10.1016/j.jalgebra.2008.01.019
[9] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[10] DOI: 10.1090/S0002-9939-10-10252-4 · Zbl 1209.16014 · doi:10.1090/S0002-9939-10-10252-4
[11] DOI: 10.1016/j.jpaa.2007.06.010 · Zbl 1162.16021 · doi:10.1016/j.jpaa.2007.06.010
[12] Chatters A. W., Rings with Chain Conditions (1980) · Zbl 0446.16001
[13] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791
[14] Goodearl K. R., Von Neumann Regular Rings (1979)
[15] DOI: 10.1017/CBO9780511841699· doi:10.1017/CBO9780511841699
[16] DOI: 10.1080/00927870902911763 · Zbl 1207.16041 · doi:10.1080/00927870902911763
[17] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[18] DOI: 10.1016/j.jalgebra.2006.02.032 · Zbl 1104.16015 · doi:10.1016/j.jalgebra.2006.02.032
[19] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017
[20] Krempa J., Fund. Math. 76 pp 121– (1972)
[21] Kwak T. K., Int. J. Algebra Comput. 21 (4) pp 1– (2011)
[22] DOI: 10.4153/CJM-1969-098-x · Zbl 0182.36701 · doi:10.4153/CJM-1969-098-x
[23] DOI: 10.1016/0021-8693(74)90112-4 · Zbl 0277.16014 · doi:10.1016/0021-8693(74)90112-4
[24] DOI: 10.1081/AGB-200049869 · Zbl 1088.16021 · doi:10.1081/AGB-200049869
[25] DOI: 10.1080/00927870600651398 · Zbl 1110.16026 · doi:10.1080/00927870600651398

[26] DOI: 10.1007/s00233-008-9063-7 · Zbl 1177.16030 · doi:10.1007/s00233-008-9063-7
[27] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178
[28] DOI: 10.2307/2303094 · Zbl 0060.07703 · doi:10.2307/2303094
[29] Milies C. P., An Introduction to Group Rings (2001)
[30] DOI: 10.1016/j.jalgebra.2005.10.008 · Zbl 1110.16036 · doi:10.1016/j.jalgebra.2005.10.008
[31] Okninski J., Semigroup Algebra (1991)
[32] Passman D. S., The Algebraic Structure of Group Rings (1977) · Zbl 0368.16003
[33] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14
[34] DOI: 10.1016/0022-4049(92)90056-L · Zbl 0761.13007 · doi:10.1016/0022-4049(92)90056-L
[35] DOI: 10.1006/jabr.2000.8451 · Zbl 0969.16006 · doi:10.1006/jabr.2000.8451

Majidinya, A.; **Moussavi, A.**
On APP skew generalized power series rings. (English) Zbl 1307.16037
Stud. Sci. Math. Hung. 50, No. 4, 436-453 (2013).

Let R be an associative ring with a unity. By *Z. Liu* and *R. Zhao* [Glasg. Math. J. 48, No. 2, 217-229 (2006; Zbl 1110.16003)], the ring R is called a left APP-ring if the left annihilator of every principal left ideal of R is right s-unital as an ideal of R. An ideal I of R is right s-unital if for each $a \in I$ there is an element $x \in I$ with $ax = a$. Equivalently, R is a left APP-ring if R modulo the left annihilator of every principal left ideal of R is a flat R-module.

Let S be a strictly totally ordered additive and commutative monoid and let $\omega\colon S \to \operatorname{End}(R)$ be a monoid homomorphism. Then let $\overline{R} = R[[S,\omega]]$ be the corresponding skew generalized power series ring with coefficients in R and exponents in S, defined by *R. Mazurek* and *M. Ziembowski* [Commun. Algebra 36, No. 5, 1855-1868 (2008; Zbl 1159.16032)]. This construction generalizes several classical ring constructions. The ring R is called (S,ω)-weakly rigid if for each $a,b \in R$ we have $aRb = 0$ if and only if $a\omega(s)(Rb) = 0$ for all $s \in S$. The ring R is called (S,ω)-Armendariz if whenever $f,g \in \overline{R}$ and $fg = 0$, then $f(s)\omega(s)(g(t)) = 0$ for all $s,t \in S$.

When R is (S,ω)-weakly rigid and (S,ω)-Armendariz, then the authors find necessary and sufficient conditions under which $\overline{R}$ is a right APP-ring. A similar result is obtained also in the case when $\omega(S) \subseteq \operatorname{Aut}(R)$ and R is (S,ω)-strongly Armendariz (i.e. $f,g \in \overline{R}$ and $fg = 0$ implies $f(u)g(v) = 0$ for all $u,v \in S$), or $\omega(s) = \mathrm{id}_R$ for all $s \in S$. Some other special cases also are investigated.

Reviewer: S. V. Mihovski (Plovdiv)

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Cited in **3** Documents

Keywords:

skew generalized power series rings; strictly ordered monoids; left APP-rings; Armendariz rings; weakly rigid rings

Full Text: DOI

Majidinya, A.; **Moussavi, A.**; **Paykan, K.**
Generalized APP-rings. (English) Zbl 1300.16002
Commun. Algebra 41, No. 12, 4722-4750 (2013).

All rings are assumed to be rings with identity. A ring R is called left PP if every principal left ideal of R is projective. Hence a ring R is left PP if and only if the left annihilator of any element of R is generated, as a left ideal, by an idempotent. A ring R is called left principally quasi-Baer (simply, left p.q.-Baer) if the left annihilator of a principal left ideal is generated, as a left ideal, by an idempotent. Thus a ring R is left p.q.-Baer if and only if R modulo the left annihilator of any principal left ideal is projective. According to *A. Moussavi*, *H. Haj Seyyed Javadi*, and *E. Hashemi* [Commun. Algebra 33, No. 7, 2115-2129 (2005; Zbl 1088.16018)], a ring R is called generalized left (principally) quasi-Baer if for any (principal) left ideal I of R, the left annihilator of I^n is generated, as a left ideal, by an idempotent for some positive integer n, depending on I.

On the other hand, by *H. Tominaga* [Math. J. Okayama Univ. 18, 117-134 (1976; Zbl 0335.16020)], a left ideal I of a ring R is said to be right s-unital if for each $a \in I$, there exists $x \in I$ such that $ax = a$. Following *Z. Liu* and *R. Zhao* [Glasg. Math. J. 48, No. 2, 217-229 (2006; Zbl 1110.16003)], a ring R is called left APP if the left annihilator $\ell_R(Ra)$ is right s-unital as an ideal of R for any element $a \in R$. Thus a ring R is left APP if and only if R modulo the left annihilator of any principal left ideal is flat. Therefore left APP rings are left p.q.-Baer.

According to the authors a ring R is called a generalized left APP ring if $\ell_R(Ra)^n$ is s-unital as an ideal of R for any element $a \in R$ and some positive integer n. Thus a ring R is generalized left APP if and only if R modulo $\ell_R(Ra)^n$ is flat as a left R-module for any element $a \in R$ and some positive integer n. The authors extend and unify the above-mentioned classes of rings by generalized left APP rings under some conditions.

Reviewer: J. K. Park (Pusan)

MSC:

16D40	Free, projective, and flat modules and ideals in associative algebras	Cited in **3** Documents
16D25	Ideals in associative algebras	
16D70	Structure and classification for modules, bimodules and ideals (except as in 16Gxx), direct sum decomposition and cancellation in associative algebras)	
16P60	Chain conditions on annihilators and summands: Goldie-type conditions	

Keywords:
left annihilators; generalized p.q.-Baer rings; generalized left APP-rings; minimal prime ideals; PP-rings; s-unital ideals; triangular matrix rings; projective principal left ideals

Full Text: DOI

References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[2] DOI: 10.1007/978-3-642-15071-5· doi:10.1007/978-3-642-15071-5
[3] DOI: 10.1023/A:1022873808997 · Zbl 1066.16018 · doi:10.1023/A:1022873808997
[4] DOI: 10.1142/S0219498802000057 · Zbl 1034.16032 · doi:10.1142/S0219498802000057
[5] DOI: 10.1216/rmjm/1181070024 · Zbl 1035.16024 · doi:10.1216/rmjm/1181070024
[6] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[7] DOI: 10.1017/S0004972700022000 · Zbl 0952.16009 · doi:10.1017/S0004972700022000
[8] DOI: 10.1090/conm/259/04088· doi:10.1090/conm/259/04088
[9] DOI: 10.1016/S0022-4049(99)00164-4 · Zbl 0947.16018 · doi:10.1016/S0022-4049(99)00164-4
[10] DOI: 10.1017/S0017089500032547 · Zbl 0903.16002 · doi:10.1017/S0017089500032547
[11] DOI: 10.1007/BF00050894 · Zbl 0771.16003 · doi:10.1007/BF00050894
[12] Chase S. U., Nagoya Math. J. 18 pp 13– (1961)
[13] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[14] Endo S., Nagoya Math. J. 17 pp 167– (1960) · Zbl 0117.02203 · doi:10.1017/S0027763000002129
[15] DOI: 10.1081/AGB-120022787 · Zbl 1032.16003 · doi:10.1081/AGB-120022787
[16] Goodearl K. R., Von Neumann Regular Rings (1991)

[17] DOI: 10.1081/AGB-100002171 · Zbl 0996.16020 · doi:10.1081/AGB-100002171
[18] DOI: 10.1016/S0022-4049(01)00149-9 · Zbl 0994.16003 · doi:10.1016/S0022-4049(01)00149-9
[19] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[20] DOI: 10.1112/plms/s3-13.1.31 · Zbl 0108.04004 · doi:10.1112/plms/s3-13.1.31
[21] DOI: 10.1007/978-1-4612-0525-8· doi:10.1007/978-1-4612-0525-8
[22] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7
[23] Liu Z., Arab. J. Sci. Eng. Sect. A Sci. 33 (2) pp 305– (2008)
[24] DOI: 10.1017/S0017089506003016 · Zbl 1110.16003 · doi:10.1017/S0017089506003016
[25] McCoy N. H., The Theory of Rings (1973) · Zbl 0273.16001
[26] DOI: 10.1007/BF01111594 · Zbl 0215.38102 · doi:10.1007/BF01111594
[27] DOI: 10.1081/AGB-200063514 · Zbl 1088.16018 · doi:10.1081/AGB-200063514
[28] DOI: 10.1142/S0219498808002771 · Zbl 1157.16008 · doi:10.1142/S0219498808002771
[29] Ôhori M., Math. J. Okayama Univ. 26 pp 157– (1984)
[30] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[31] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[32] DOI: 10.1016/j.jalgebra.2008.10.002 · Zbl 1217.16009 · doi:10.1016/j.jalgebra.2008.10.002
[33] DOI: 10.1090/S0002-9904-1967-11812-3 · Zbl 0149.28102 · doi:10.1090/S0002-9904-1967-11812-3
[34] DOI: 10.1007/978-3-642-66066-5· doi:10.1007/978-3-642-66066-5
[35] Tominaga H., Math. J. Okayama Univ. 18 (2) pp 117– (1976)

Manaviyat, R.; **Moussavi, A.**; **Habibi, M.**
Principally quasi-Baer skew power series modules. (English) Zbl 1272.16041
Commun. Algebra 41, No. 4, 1278-1291 (2013).

Summary: A module M_R is called principally quasi-Baer (or simply p.q.-Baer) if the annihilator of every cyclic submodule of M_R is generated by an idempotent, as a right ideal. Let α be an automorphism of R and M_R be an α-compatible module and every countable subset of right semicentral idempotents in R has a generalized countable join or R satisfies the ACC on left annihilator ideals. It is shown that M_R is p.q.-Baer if and only if $M[[x]]_{R[[x;\alpha]]}$ is p.q.-Baer if and only if $M[[x,x^{-1}]]_{R[[x,x^{-1};\alpha]]}$ is p.q.-Baer. As a consequence, we unify and extend nontrivially many of the previously known results. Examples to illustrate and delimit the theory are provided.

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16S36 Ordinary and skew polynomial rings and semigroup rings

Cited in **4** Documents

Keywords:

polynomial modules; principally quasi-Baer modules; skew power series modules; skew Laurent series modules; semicentral idempotents; ACC on left annihilator ideals

Full Text: DOI
References:

[1] Annin , S. (2002).Associated and Attached Primes over Noncommutative Rings.Ph.D. dissertation, University of California at Berkeley . · Zbl 1010.16025
[2] Başer M., Taiwan. J. Math. 11 (1) pp 267– (2007)
[3] DOI: 10.1007/978-3-642-15071-5· doi:10.1007/978-3-642-15071-5
[4] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865

[5] Birkenmeier G. F., Kyungpook Math. J. 40 pp 243– (2000)
[6] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[7] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4
[8] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[9] Fraser J. A., Math. Japonica 34 (5) pp 715– (989)
[10] Hashemi E., New York J. Math. 14 pp 403– (2008)
[11] DOI: 10.4134/BKMS.2004.41.4.657 · Zbl 1065.16025 · doi:10.4134/BKMS.2004.41.4.657
[12] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1
[13] Hashemi E., Stud. Scie. Math. Hungar. 45 (4) pp 469– (2008)
[14] Huang F. K., Taiwan. J. Math. 45 (4) pp 469– (2008)
[15] Kaplansky I., Ann. Math. 53 (2) pp 235– (1951) · Zbl 0042.12402 · doi:10.2307/1969540
[16] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[17] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)
[18] Lee T. K., Reduced Modules. Rings, Modules, Algebras, and Abelian Groups (2004)
[19] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825
[20] DOI: 10.1080/00927870903045173 · Zbl 1202.16024 · doi:10.1080/00927870903045173
[21] McKerrow A. S., Quart J. Math. Oxford Ser. 25 (2) pp 359– (1974) · Zbl 0302.16027 · doi:10.1093/qmath/25.1.359
[22] DOI: 10.1081/AGB-200063514 · Zbl 1088.16018 · doi:10.1081/AGB-200063514
[23] Nasr-Isfahani A. R., J. Algebra Appl. 7 (2) pp 1– (2008)
[24] DOI: 10.2307/1969091 · Zbl 0060.27103 · doi:10.2307/1969091
[25] Rizvi S. T., Comm. Algebra 32 (1) pp 103– (2004) · Zbl 1072.16007 · doi:10.1081/AGB-120027854
[26] Rizvi S. T., Adv. Ring Theor. pp 225– (2005)· doi:10.1142/9789812701671$_0$021
[27] Rizvi S. T., Comm. Algebra 35 (9) pp 2960– (2007) · Zbl 1154.16005 · doi:10.1080/00927870701404374
[28] DOI: 10.1016/j.jalgebra.2008.10.002 · Zbl 1217.16009 · doi:10.1016/j.jalgebra.2008.10.002
[29] Roman , C. S. (2004). Baer and quasi-Baer modules. Ph.D. dissertation, The Ohio State University . · Zbl 1072.16007
[30] Tuganbaev A. A., Rings Close to Regular (2002)· doi:10.1007/978-94-015-9878-1
[31] Tuganbaev A. A., Some Ring and Module Properties of Skew Power Series (2000) · Zbl 0997.16032 · doi:10.1007/978-3-662-04166-6$_5$9
[32] Tuganbaev A. A., Some Ring and Module Properties of Skew Laurent Series (2002) · Zbl 0997.16033

Habibi, M.; **Moussavi, A.**; **Alhevaz, A.**
The McCoy condition on Ore extensions. (English) Zbl 1269.16019
Commun. Algebra 41, No. 1, 124-141 (2013).

Extending the results of a large number of papers on the McCoy property for skew polynomial rings, the authors study a version of the McCoy property for general Ore extensions. We recall that letting R be a ring, α be an endomorphism of R, and δ be a left α-derivation of R (so δ is an additive map satisfying $\delta(ab) = \delta(a)b + \alpha(a)\delta(b)$), the general (left) Ore extension $R[x;\alpha,\delta]$ is the ring of polynomials over R in the variable x, with termwise addition and with coefficients written on the left of x, subject to the skew-multiplication rule $xr = \alpha(r)x + \delta(r)$ for $r \in R$.

The authors call R an '(α,δ)-skew McCoy ring' when, for each pair of elements $f, g \in S = R[x;\alpha,\delta] \setminus \{0\}$ satisfying $fg = 0$, there exists some $c \in R \setminus \{0\}$ with $fc = 0$. The reader should keep in mind that this definition is not a left-right symmetric notion on two levels: first, in the choice of S as a left Ore extension, and second, in the choice of f over g.

The authors prove that this property is preserved under a number of ring extensions. In particular, it passes to certain subrings of the (skew-)upper triangular matrix rings and to (two-sided) classical rings of quotients. They also prove that reversible, α-compatible, δ-compatible rings are (α,δ)-skew McCoy, where α-compatibility means "$ab = 0$ if and only if $a\alpha(b) = 0$, for $a, b \in R$", and δ-compatibility means "$ab = 0$ implies $a\delta(b) = 0$, for $a, b \in R$."

There is one typographical error which bears mentioning, which occurs on page 128 (and again on page 137). When extending the α-derivation δ to the classical ring of quotients, the authors should instead write $\overline{\delta}(rc^{-1}) = (\delta(r) - \alpha(r)\alpha(c)^{-1}\delta(c))c^{-1}$. Propitiously, the results which used the incorrect formula seem to still hold true.

Reviewer: Pace Nielsen (Provo)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16U80 Generalizations of commutativity (associative rings and algebras)

Cited in **19** Documents

Keywords:

skew polynomial rings; Ore extensions; skew McCoy rings; ring extensions; reversible rings; semicommutative rings; zip rings

Full Text: DOI

References:

[1] Anderson D. D., Comm. Algebra 26 (7) pp 2265– (1998) · Zbl 0915.13001 · doi:10.1080/00927879808826274

[2] Armendariz E. P., J. Austral. Math. Soc. 18 pp 470– (1974) · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[3] Başer M., Comm. Algebra 37 (11) pp 4026– (2009) · Zbl 1187.16027 · doi:10.1080/00927870802545661

[4] Beachy J. A., Pacific J. Math. 58 (1) pp 1– (1975) · Zbl 0309.16004 · doi:10.2140/pjm.1975.58.1

[5] Bell H. E., Bull. Austral. Math. Soc. 2 pp 363– (1970) · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[6] Camillo V., J. Pure Appl. Algebra 212 pp 599– (2008) · Zbl 1162.16021 · doi:10.1016/j.jpaa.2007.06.010

[7] Cedó F., Comm. Algebra 19 (7) pp 1983– (1991) · Zbl 0733.16007 · doi:10.1080/00927879108824242

[8] Cohn P. M., Bull. London Math. Soc. 31 pp 641– (1999) · Zbl 1021.16019 · doi:10.1112/S0024609399006116

[9] Du X. N., J. Math. Res. Exposition 14 (1) pp 57– (1994)

[10] Faith C., Publ. Math. 33 (2) pp 329– (1989) · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9

[11] Faith C., Comm. Algebra 19 (7) pp 1967– (1991)

[12] Habeb J. M., Math. J. Okayama Univ. 32 pp 73– (1990)

[13] Habibi M., Comm. Algebra 40:3999–4018. Math. Hungar. 107 (3) pp 207– (2012)

[14] Hashemi E., Acta Math. Hungar. 107 (3) pp 207– (2005) · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[15] Hirano Y., J. Pure Appl. Algebra 168 (1) pp 45– (2002) · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[16] Hong C. Y., J. Pure Appl. Algebra 195 pp 231– (2005) · Zbl 1071.16020 · doi:10.1016/j.jpaa.2004.08.025

[17] Huh C., Comm. Algebra 30 (2) pp 751– (2002) · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[18] Kim N. K., J. Pure Appl. Algebra 185 pp 207– (2003) · Zbl 1040.16021 · doi:10.1016/S0022-4049(03)00109-9

[19] Koşan M. T., Canad. Math. Bull. 52 (2) pp 267– (2009) · Zbl 1189.16031 · doi:10.4153/CMB-2009-029-5

[20] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)

[21] Lam T. Y., Comm. Algebra 25 (8) pp 2459– (1997) · Zbl 0879.16016 · doi:10.1080/00927879708826000

[22] Lei Z., Bull. Austral. Math. Soc. 76 pp 137– (2007) · Zbl 1127.16027 · doi:10.1017/S0004972700039526

[23] Marks G., J. Algebra 266 (2) pp 494– (2003) · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6

[24] Mason G., Comm. Algebra 9 (17) pp 1709– (1981) · Zbl 0468.16024 · doi:10.1080/00927878108822678

[25] McCoy N. H., Amer. Math. Monthly 49 pp 286– (1942) · Zbl 0060.07703 · doi:10.2307/2303094

[26] Moussavi A., J. Korean Math. Soc. 42 (2) pp 353– (2005) · Zbl 1090.16012 · doi:10.4134/JKMS.2005.42.2.353

[27] Nasr-Isfahani A. R., Comm. Algebra 36 (2) pp 508– (2008) · Zbl 1142.16016 · doi:10.1080/00927870701718849

[28] Nielsen P. P., J. Algebra 298 pp 134– (2006) · Zbl 1110.16036 · doi:10.1016/j.jalgebra.2005.10.008

[29] Rege M. B., Proc. Japan Acad. Ser. A Math. Sci. 73 pp 14– (1997) · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[30] Tuganbaev , A. A. (1998). Semidistributive modules and rings. In:Math. Appl.Vol. 449. Kluwer Academic Publishers . · Zbl 0909.16001

[31] Tuganbaev , A. A. (2002). Rings Close to Regular. Mathematics and Its Applications, Kluwer Academic Publishers . · Zbl 1120.16012

[32] Zelmanowitz J. M., Proc. Amer. Math. Soc. 57 (2) pp 213– (1976)· doi:10.1090/S0002-9939-1976-0419512-6

[33] Chen J., Comm. Algebra 34 pp 3659– (2006) · Zbl 1114.16024 · doi:10.1080/00927870600860791

Alhevaz, A.; **Moussavi, A.**; **Hashemi, E.**

Nilpotent elements and skew polynomial rings. (English) Zbl 1298.16024

Algebra Colloq. 19, Spec. Iss. 1, 821-840 (2012).

Summary: We study the structure of the set of nilpotent elements in extended semicommutative rings and introduce nil α-semicommutative rings as a generalization. We resolve the structure of nil α-semicommutative rings and obtain various necessary or sufficient conditions for a ring to be nil α-semicommutative, unifying and generalizing a number of known commutative-like conditions in special cases. We also classify which of the standard nilpotence properties on polynomial rings pass to skew polynomial ring. Constructing various examples, we classify how the nil α-semicommutative rings behave under various ring extensions. Also, we consider the nil-Armendariz condition on a skew polynomial ring.

MSC:

16U80 Generalizations of commutativity (associative rings and algebras)
16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16S36 Ordinary and skew polynomial rings and semigroup rings
16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16W20 Automorphisms and endomorphisms

Cited in **1** Document

Keywords:

semicommutative rings; skew polynomial rings; nilpotent elements; nil-Armendariz rings; skew triangular matrix rings

Full Text: DOI

References:

[1] S. A.~Amitsur, Proc. Amer. Math. Soc.~7, 35 (1956), DOI: 10.1090/S0002-9939-1956-0075933-2.

[2] D. D.~Anderson and V.~Camillo, Comm. Algebra~26(7), 2265 (1998), DOI: 10.1080/00927879808826274.

[3] R.~Antoine, J. Algebra~319, 3128 (2008), DOI: 10.1016/j.jalgebra.2008.01.019.

[4] E. P.~Armendariz, J. Austral. Math. Soc.~18, 470 (1974), DOI: 10.1017/S1446788700029190.

[5] M.~Başer and T. K.~Kwak, Algebra Colloquium~17(2), 257 (2010).

[6] G. F.~Birkenmeier, H. E.~Heatherly and E. K.~Lee, Ring Theory (World Scientific, Singapore-River Edge, 1993)~pp. 102-129.

[7] P. M.~Cohn, Bull. London Math. Soc.~31(6), 641 (1999), DOI: 10.1112/S0024609399006116.

[8] K. R. ~ Goodearl and R. B. ~ Warfield , An Introduction to Non-commutative Noetherian Rings (Cambridge University Press , Cambridge , 1989) . · Zbl 0679.16001

[9] M. Habibi, A. Moussavi, A. Alhevaz, Some annihilator properties of skew triangular matrix rings (preprint) . · Zbl 1341.16029

[10] E.~Hashemi and A.~Moussavi, Acta Math. Hungar.~107(3), 207 (2005).

[11] I. N.~Herstein and L. W.~Small, Canad. J. Math.~16, 771 (1964), DOI: 10.4153/CJM-1964-074-0.

[12] Y.~Hirano, J. Pure Appl. Algebra~168, 45 (2002), DOI: 10.1016/S0022-4049(01)00053-6.

[13] C. Y.~Hong, N. K.~Kim and T. K.~Kwak, J. Pure Appl. Algebra~151(3), 215 (2000), DOI: 10.1016/S0022-4049(99)00020-1.

[14] C. Y.~Hong, N. K.~Kim and T. K.~Kwak, Comm. Algebra~31(1), 103 (2003), DOI: 10.1081/AGB-120016752.

[15] D. A.~Jordan, J. London Math. Soc.~25(3), 435 (1982).

[16] J.~Krempa, Algebra Colloquium~3(4), 289 (1996).

[17] J.~Lambek, Canad. Math. Bull.~14, 359 (1971), DOI: 10.4153/CMB-1971-065-1.

[18] C.~Lanski, Canad. J. Math.~21, 904 (1969), DOI: 10.4153/CJM-1969-098-x.

[19] T. H.~Lenagan, J. Algebra~29, 77 (1974), DOI: 10.1016/0021-8693(74)90112-4.

[20] G.~Marks, J. Algebra~266(2), 494 (2003), DOI: 10.1016/S0021-8693(03)00301-6.

[21] L.~Ouyang, Int. Electron. J. Algebra~3, 103 (2008).

[22] M. B.~Rege and S.~Chhawchharia, Proc. Japan Acad. (Ser. A Math. Sci.)~73, 14 (1997), DOI: 10.3792/pjaa.73.14.

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically

Alhevaz, A.; **Moussavi, A.**
On skew Armendariz and skew quasi-Armendariz modules. (English) Zbl 1278.16029
Bull. Iran. Math. Soc. 38, No. 1, 55-84 (2012).

Summary: Let α be an endomorphism and δ an α-derivation of a ring R. In this paper we study the relationship between an R-module M_R and the general polynomial module $M[x]$ over the skew polynomial ring $R[x;\alpha,\delta]$. We introduce the notions of skew-Armendariz modules and skew quasi-Armendariz modules which are generalizations of α-Armendariz modules and extend the classes of non-reduced skew-Armendariz modules. An equivalent characterization of an α-skew Armendariz module is given. Some properties of this generalization are established, and connections of properties of a skew-Armendariz module M_R with those of $M[x]_{R[x;\alpha,\delta]}$ are investigated. As a consequence we extend and unify several known results related to Armendariz modules.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16W20 Automorphisms and endomorphisms
16U80 Generalizations of commutativity (associative rings and algebras)
16E50 von Neumann regular rings and generalizations (associative algebraic aspects)

Cited in **5** Documents

Keywords:

skew polynomial rings; Baer modules; quasi-Baer modules; skew-Armendariz modules; skew quasi-Armendariz modules

Habibi, M.; **Moussavi, A.**; **Mokhtari, S.**
On skew Armendariz of Laurent series type rings. (English) Zbl 1276.16039
Commun. Algebra 40, No. 11, 3999-4018 (2012).

The authors of this paper introduce the notion of α-Armendariz of Laurent series type ring (or simply, α-LA ring). Let α be an automorphism of a ring R. R is called an α-LA ring if for each $f(x)=\sum_{i=-m}^{\infty} a_i x^i$ and $g(x)=\sum_{j=-n}^{\infty} b_j x^j \in R[[x,x^{-1};\alpha]]$, $f(x)g(x)=0$ implies that $a_i\alpha^i(b_j)=0$ for any $i\geq -m$ and $j\geq -n$. This notion is a generalization of α-skew Armendariz ring to the skew Laurent series type ring over associative ring with unity.

This paper is devoted to the study of properties of α-LA rings. In particular, the following main results are obtained: • There exists an example of an Armendariz ring R with an automorphism α which is not α-LA ring. • Let α be an automorphism of a ring R. Then R is α-rigid iff R is reduced and α-LA ring. • Let R be an α-LA ring. Then R is a Baer ring iff $R[[x,x^{-1};\alpha]]$ is a Baer ring. • Let R be an α-LA ring. Then $R[[x,x^{-1};\alpha]]$ is a left p.p.-ring iff R is a left p.p.-left ring and every countable family of idempotents of R has a generalized join in the set of all idempotent elements of R. • There are various types of examples of skew Armendariz of Laurent series type rings, extending the class of skew Armendariz of Laurent series type rings to non-semiprime rings.

Reviewer: Anna Kuzmina (Barnaul)

MSC:

16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16S36 Ordinary and skew polynomial rings and semigroup rings
16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Cited in **8** Documents

Keywords:
Armendariz rings; skew Laurent series rings; Baer rings; weakly rigid rings

Full Text: DOI
References:

[1] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190
[2] DOI: 10.1080/00927878308822865 · Zbl 0505.16004 · doi:10.1080/00927878308822865
[3] Birkenmeier G. F., Kyungpook Math. J. 40 pp 247– (2000)
[4] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4
[5] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[6] DOI: 10.1081/AGB-200053826 · Zbl 1069.16032 · doi:10.1081/AGB-200053826
[7] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791
[8] Clark , W. E. (1967). Twisted matrix units semigroup algebras.Duke Math. J.34: 417–424 . · Zbl 0204.04502
[9] Fraser , J. A. , Nicholson , W. K. (1989). Reduced PP-rings.Math. Japonica34(5): 715–725 . · Zbl 0688.16024
[10] DOI: 10.1080/00927870903200943 · Zbl 1213.16016 · doi:10.1080/00927870903200943
[11] DOI: 10.1007/s10474-005-0191-1 · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1
[12] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[13] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752
[14] Huang F. K., Taiwanese J. Math. 45 (4) pp 469– (2008)
[15] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[16] DOI: 10.1080/00927870600549782 · Zbl 1121.16037 · doi:10.1080/00927870600549782
[17] Kim , N. K. , Lee , Y. (2000). Armendariz rings and reduced rings.J. Algebra223: 477–488 . · Zbl 0957.16018
[18] Krempa J., Algebra Colloq. 3 (4) pp 289– (1996)
[19] DOI: 10.1081/AGB-120037221 · Zbl 1068.16037 · doi:10.1081/AGB-120037221
[20] DOI: 10.1081/AGB-120005825 · Zbl 1018.16023 · doi:10.1081/AGB-120005825
[21] DOI: 10.1080/00927870903045173 · Zbl 1202.16024 · doi:10.1080/00927870903045173
[22] DOI: 10.1081/AGB-200034148 · Zbl 1064.16027 · doi:10.1081/AGB-200034148
[23] DOI: 10.1017/S0017089509005084 · Zbl 1184.16026 · doi:10.1017/S0017089509005084
[24] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14
[25] Tominaga H., Math. J. Okayama Univ. 18 pp 117– (1976)

Mohammadi, R.; Moussavi, A.; Zahiri, M.
On weak zip skew polynomial rings. (English) Zbl 1267.16026
Asian-Eur. J. Math. 5, No. 3, Paper No. 1250039, 17 p. (2012).

Let R be a ring with 1, α an endomorphism of R, δ an α-derivation of R, and $R[x;\alpha,\delta]$ the Ore extension of R. Let $\mathrm{nil}(R)$ be the set of all nilpotent elements of R. Then R is called nil α-compatible if for any $a,b\in\mathrm{nil}(R)$, $ab=0$ if and only if $a\alpha(b)=0$, and nil δ-compatible if $ab=0$ implies $a\delta(b)=0$. If R is both nil α-compatible and nil δ-compatible, then R is called nil (α,δ)-compatible.

It is shown that for a nil (α,δ)-compatible ring R, $\alpha(\mathrm{nil}(R))\subseteq\mathrm{nil}(R)$ and $\delta(\mathrm{nil}(R))\subseteq\mathrm{nil}(R)$. There exists a nil (α,δ)-compatible but not (α,δ)-compatible ring.

A ring R is called α-weakly rigid if for $a\in R$, $a\alpha^k(a)\in\mathrm{nil}(R)$ implies $a\in\mathrm{nil}(R)$ for any positive k, and R is said to have quasi-IFP if any $\sum_{i=0}^n a_ix^i\in\mathrm{nil}(R[x])$ implies $\sum_i Ra_iR\subset\mathrm{nil}(R)$. A ring R is said to satisfy the (α,δ)-condition if R is α-weakly rigid and nil (α,δ)-compatible.

The authors show that if R has quasi-IFP and satisfies the (α,δ)-condition; then, R is a right (respectively, left) weak zip ring if and only if so is $R[x;\alpha,\delta]$, where a weak zip ring is defined by *L. Ouyang*, [Glasg.

Math. J. 51, No. 3, 525-537 (2009; Zbl 1186.16017)].

Reviewer: George Szeto (Peoria)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N40 Nil and nilpotent radicals, sets, ideals, associative rings
16U80 Generalizations of commutativity (associative rings and algebras)
16W20 Automorphisms and endomorphisms
16E50 von Neumann regular rings and generalizations (associative algebraic aspects)

Keywords:

Ore extensions; skew polynomial rings; nilpotent elements; nil-compatible rings; right weak zip rings; quasi-IFP rings

Full Text: DOI

References:

[1] DOI: 10.2140/pjm.1975.58.1 · Zbl 0309.16004 · doi:10.2140/pjm.1975.58.1
[2] Birkenmeier G. F., Singapore pp 102– (1993)
[3] DOI: 10.1080/00927879108824242 · Zbl 0733.16007 · doi:10.1080/00927879108824242
[4] DOI: 10.1112/S0024609399006116 · Zbl 1021.16019 · doi:10.1112/S0024609399006116
[5] DOI: 10.1155/2008/496720 · Zbl 1159.16021 · doi:10.1155/2008/496720
[6] DOI: 10.1080/00927879108824235 · Zbl 0729.16015 · doi:10.1080/00927879108824235
[7] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9
[8] Hashemi E., Acta. Math. Hungar. 151 pp 215– (2000)
[9] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[10] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1
[11] DOI: 10.1016/j.jpaa.2004.08.025 · Zbl 1071.16020 · doi:10.1016/j.jpaa.2004.08.025
[12] DOI: 10.4134/JKMS.2009.46.5.1027 · Zbl 1182.16015 · doi:10.4134/JKMS.2009.46.5.1027
[13] DOI: 10.1016/S0022-4049(03)00109-9 · Zbl 1040.16021 · doi:10.1016/S0022-4049(03)00109-9
[14] DOI: 10.1080/00927870500345901 · Zbl 1092.16013 · doi:10.1080/00927870500345901
[15] DOI: 10.1080/00927878408822986 · Zbl 0535.16006 · doi:10.1080/00927878408822986
[16] Krempa J., Algebra Coll. 3 (4) pp 289– (1996)
[17] DOI: 10.1080/00927879708826000 · Zbl 0879.16016 · doi:10.1080/00927879708826000
[18] DOI: 10.1016/S0022-4049(02)00070-1 · Zbl 1046.16015 · doi:10.1016/S0022-4049(02)00070-1
[19] DOI: 10.1017/S0017089509005151 · Zbl 1186.16017 · doi:10.1017/S0017089509005151
[20] DOI: 10.1090/S0002-9939-1976-0419512-6· doi:10.1090/S0002-9939-1976-0419512-6

Mohammadi, R.; **Moussavi, A.**; **Zahiri, M.**
On nil-semicommutative rings. (English) Zbl 1253.16024
Int. Electron. J. Algebra 11, 20-37 (2012).

Summary: Semicommutative and Armendariz rings are a generalization of reduced rings, and therefore, nilpotent elements play an important role in this class of rings. There are many examples of rings with nilpotent elements which are semicommutative or Armendariz. In fact, [in Commun. Algebra 26, No. 7, 2265-2272 (1998; Zbl 0915.13001)], *D. D. Anderson* and *V. Camillo* prove that if R is a ring and $n \geq 2$, then $R[x]/(x^n)$ is Armendariz if and only if R is reduced.

In order to give a noncommutative generalization of the results of Anderson and Camillo, we introduce the notion of nil-semicommutative rings which is a generalization of semicommutative rings. If

R is a nil-semicommutative ring, then we prove that $ni\ell(R[x]) = ni\ell(R)[x]$. It is also shown that nil-semicommutative rings are 2-primal, and when R is a nil-semicommutative ring, then the polynomial ring $R[x]$ over R and the rings $R[x]/(x^n)$ are weak Armendariz, for each positive integer n, generalizing related results of *Z.-K. Liu* and *R.-Y. Zhao*, [Commun. Algebra 34, No. 7, 2607-2616 (2006; Zbl 1110.16026)].

MSC:

16S36	Ordinary and skew polynomial rings and semigroup rings	Cited in **13** Documents
16N40	Nil and nilpotent radicals, sets, ideals, associative rings	
16U80	Generalizations of commutativity (associative rings and algebras)	
16W20	Automorphisms and endomorphisms	
16E50	von Neumann regular rings and generalizations (associative algebraic aspects)	

Keywords:

semicommutative rings; Armendariz rings; reduced rings; nilpotent elements; nil-semicommutative rings; polynomial rings

Full Text: Link

Habibi, M.; **Moussavi, A.**
On nil skew Armendariz rings. (English) Zbl 1263.16028
Asian-Eur. J. Math. 5, No. 2, 1250017, 16 p. (2012).

Let R be a ring with 1, α an endomorphism, δ an α-derivation of R, and $R[x;\alpha,\delta]$ the Ore extension of R. Then R is called nil (α,δ)-skew Armendariz if for $f(x)=\sum_{i=0}^m a_ix^i$ and $g(x)=\sum_{j=0}^n b_jx^j \in R[x;\alpha,\delta]$, $f(x)g(x)\in \mathrm{nil}(R)[x;\alpha,\delta]$ implies $a_ix^ib_jx^j\in \mathrm{nil}(R)[x;\alpha,\delta]$ for each i and j where $\mathrm{nil}(R)$ is the set of nilpotent elements of R. In particular, a nil $(id_R,0)$-skew Armendariz ring is a nil-Armendariz ring. The authors show some conditions for R under which R is nil (α,δ)-skew Armendariz.

Theorem 1. Let R be α-compatible (i.e., for $a,b\in R$, $ab=0$ if and only if $a\alpha(b)=0$) and $\mathrm{nil}(R)$ is an ideal, then R is nil (α,δ)-skew Armendariz.

Theorem 2. If R is α-compatible and α-skew Armendariz, then R is nil $(\alpha,0)$-skew Armendariz.

Theorem 3. Let R be (α,δ)-compatible (i.e., R is both α- and δ-compatible as defined similarly above) and $\mathrm{nil}(R)$ is a subring. Then, R is nil (α,δ)-skew Armendariz if and only if $R/\mathrm{Nil}^*(R)$ is $(\overline{\alpha},\overline{\delta})$-skew Armendariz where $\mathrm{Nil}^*(R)$ is the upper nil-radical of R, and $\overline{\alpha}$ and $\overline{\delta}$ are induced by α and δ, respectively.

Moreover, a nil (α,δ)-skew Armendariz ring R is characterized in terms of $R[x]$ and some subrings of the skew triangular matrix ring $T_n(R,\sigma)$ where σ is an endomorphism of R, and for all $i\le j$, $(a_{ij}),(b_{ij})\in T_n(R,\sigma)$, $(a_{ij})(b_{ij})=(c_{ij})$, such that $c_{ij}=\sum_{k=0}^{j-i} a_{i(i+k)}\sigma^k b_{(i+k)j}$.

Reviewer: George Szeto (Peoria)

MSC:

16S36	Ordinary and skew polynomial rings and semigroup rings	Cited in **7** Documents
16N40	Nil and nilpotent radicals, sets, ideals, associative rings	

Keywords:

nil-Armendariz rings; NI rings; 2-primal rings; nilpotent elements; Ore extensions

Full Text: DOI

References:

[1] DOI: 10.1080/00927872.2010.548842 · Zbl 1260.16024 · doi:10.1080/00927872.2010.548842

[2] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[3] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274

[4] DOI: 10.1016/j.jalgebra.2008.01.019 · Zbl 1157.16007 · doi:10.1016/j.jalgebra.2008.01.019

[5] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[6] G. F.~Birkenmeier, H. E.~Heatherly and E. K.~Lee, Ring Theory, eds. S. K.~Jain and S. T.~Rizvi (World Scientific, Singapore, 1993)~pp. 102–129.

[7] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791

[8] DOI: 10.1080/00927870903200943 · Zbl 1213.16016 · doi:10.1080/00927870903200943

[9] Hashemi E., Acta Math. Hungar. 107 pp 207– · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[10] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1

[11] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[12] DOI: 10.1142/S100538670600023X · Zbl 1095.16014 · doi:10.1142/S100538670600023X

[13] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[14] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017

[15] Krempa J., Algebra Colloq. 3 pp 289–

[16] DOI: 10.1080/00927879708826000 · Zbl 0879.16016 · doi:10.1080/00927879708826000

[17] DOI: 10.1080/00927870600651398 · Zbl 1110.16026 · doi:10.1080/00927870600651398

[18] DOI: 10.1081/AGB-100002173 · Zbl 1005.16027 · doi:10.1081/AGB-100002173

[19] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6

[20] Moussavi A., J. Korean Math. Soc. 42 pp 353– · Zbl 1090.16012 · doi:10.4134/JKMS.2005.42.2.353

[21] DOI: 10.1080/00927870701718849 · Zbl 1142.16016 · doi:10.1080/00927870701718849

[22] DOI: 10.1142/S0219498808002771 · Zbl 1157.16008 · doi:10.1142/S0219498808002771

[23] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[24] DOI: 10.1090/S0002-9947-1973-0338058-9· doi:10.1090/S0002-9947-1973-0338058-9

[25] DOI: 10.1007/978-94-015-9878-1· doi:10.1007/978-94-015-9878-1

Habibi, M.; **Moussavi, A.**

Nilpotent elements and nil-Armendariz property of monoid rings. (English) Zbl 1282.16032

J. Algebra Appl. 11, No. 4, Article ID 1250080, 14 p. (2012).

Summary: *R. Antoine* [J. Algebra 319, No. 8, 3128-3140 (2008; Zbl 1157.16007)] studied the structure of the set of nilpotent elements in Armendariz rings and introduced nil-Armendariz rings. For a monoid M, we introduce nil-Armendariz rings relative to M, which is a generalization of nil-Armendariz rings and we investigate their properties. This condition is strongly connected to the question of whether or not a monoid ring $R[M]$ over a nil ring R is nil, which is related to a question of *A. S. Amitsur* [Proc. Am. Math. Soc. 7, 35-48 (1956; Zbl 0070.03004)]. This is true for any 2-primal ring R and u.p.-monoid M. If the set of nilpotent elements of a ring R forms an ideal, then R is nil-Armendariz relative to any u.p.-monoid M. Also, for any monoid M with an element of infinite order, M-Armendariz rings are nil M-Armendariz. When R is a 2-primal ring, then $R[x]$ and $R[x, x^{-1}]$ are nil-Armendariz relative to any u.p.-monoid M, and we have $\mathrm{nil}(R[M]) = \mathrm{nil}(R)[M]$.

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings
16N40 Nil and nilpotent radicals, sets, ideals, associative rings
20M25 Semigroup rings, multiplicative semigroups of rings

Cited in **4** Documents

Keywords:

nil Armendariz rings; 2-primal rings; polynomial rings; nilpotent elements; u.p. monoids; monoid rings; nil rings; NI rings

Full Text: DOI

References:

[1] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[2] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274

[3] DOI: 10.1016/j.jalgebra.2008.01.019 · Zbl 1157.16007 · doi:10.1016/j.jalgebra.2008.01.019

[4] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[5] G. F.~Birkenmeier, H. E.~Heatherly and E. K.~Lee, Ring Theory, eds. S. K.~Jain and S. T.~Rizvi (World Scientific, Singapore, 1993)~pp. 102–129.

[6] DOI: 10.1016/S0021-8693(03)00155-8 · Zbl 1054.16018 · doi:10.1016/S0021-8693(03)00155-8

[7] DOI: 10.1080/00927870600860791 · Zbl 1114.16024 · doi:10.1080/00927870600860791

[8] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[9] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017

[10] DOI: 10.1081/AGB-200049869 · Zbl 1088.16021 · doi:10.1081/AGB-200049869

[11] DOI: 10.1080/00927870600651398 · Zbl 1110.16026 · doi:10.1080/00927870600651398

[12] DOI: 10.1081/AGB-100002173 · Zbl 1005.16027 · doi:10.1081/AGB-100002173

[13] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6

[14] Okninski J., Semigroup Algebra (1991)

[15] Passman D. S., The Algebraic Structure of Group Rings (1977) · Zbl 0368.16003

[16] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[17] DOI: 10.1016/0022-4049(92)90056-L · Zbl 0761.13007 · doi:10.1016/0022-4049(92)90056-L

[18] DOI: 10.1006/jabr.2000.8451 · Zbl 0969.16006 · doi:10.1006/jabr.2000.8451

Alhevaz, A.; **Moussavi, A.**

Annihilator conditions in matrix and skew polynomial rings. (English) Zbl 1259.16032

J. Algebra Appl. 11, No. 4, Article ID 1250079, 26 p. (2012).

Let R be a ring with 1, an endomorphism α of R, and an α-derivation δ. The Ore extension of R, $R[x;\alpha,\delta]$ is called a skew Armendariz ring if for $f(x)=\sum_{i=0}^n a_i x^i$, $g(x)=\sum_{j=0}^m b_j x^j$, $f(x)g(x)=0$ implies $a_0 b_j=0$ for each j. For $n=m=1$, if $f(x)g(x)=0$ implies $a_0b_1=a_1b_0=0$, then R is called linearly Armendariz. An α is called compatible if for all $a,b\in R$, $ab=0$ if and only if $a\alpha(b)=0$; and R is called α compatible if R has a compatible α. If $ab=0$ implies $a\delta(b)=0$, then R is called δ compatible; and R is (α,δ) compatible if it is both α and δ compatible.

Let R be an α compatible linearly skew Armendariz ring. The authors show that the following radicals of R are the same: $N_0(R)=\mathrm{Nil}_*(R)=\text{L-rad}(R)=\mathrm{Nil}^*(R)=A(R)$ where $N_0(R)$ is the Wedderburn radical of R, $\mathrm{Nil}_*(R)$ the lower nil radical, $\text{L-rad}(R)$ the Levitzki radical, $\mathrm{Nil}^*(R)$ the upper nil radical, and $A(R)$ the sum of all nil left ideals of R. Also $J(R[x;\alpha,\delta])\cap R$ is a nil ideal of R where $J(R[x;\alpha,\delta])$ is the Jacobson radical of $R[x;\alpha,\delta]$. Moreover, the above equations of radicals also hold for $R[x;\alpha,\delta]$ over an α compatible skew Armendariz ring R.

Let $T_n(R)$ be the upper triangular matrix ring of order n for some integer n over R with the extended endomorphism α from R and the extended derivation δ. Then there exists a linearly skew Armendariz ring R such that $T_n(R)$ is not linearly skew Armendariz. The authors show some maximal skew Armendariz subrings of $T_n(R)$ over an α rigid and reduced ring R where α is a monomorphism and δ is an α-derivation of R.

Reviewer: George Szeto (Peoria)

MSC:

16S36 Ordinary and skew polynomial rings and semigroup rings

16N80 General radicals and associative rings

16S50 Endomorphism rings; matrix rings

16P60 Chain conditions on annihilators and summands: Goldie-type conditions

Cited in **7** Documents

Keywords:

skew Armendariz rings; skew polynomial rings; radicals; Jacobson radical; zip rings; rigid rings; upper triangular matrix rings

Full Text: DOI

References:

[1] DOI: 10.1080/00927872.2010.548842 · Zbl 1260.16024 · doi:10.1080/00927872.2010.548842

[2] DOI: 10.4153/CJM-1956-040-9 · Zbl 0072.02404 · doi:10.4153/CJM-1956-040-9

[3] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[4] S. A.~Amitsur, Rings, Modules and Radicals, Colloquia Mathematica. Societis. Janos Bolyai~6 (North-Holland, 1973)~pp. 47–65.

[5] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274

[6] DOI: 10.1080/00927879908826596 · Zbl 0929.16032 · doi:10.1080/00927879908826596

[7] DOI: 10.1016/j.jalgebra.2008.01.019 · Zbl 1157.16007 · doi:10.1016/j.jalgebra.2008.01.019

[8] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[9] Başer M., Commun. Fac. Sci. Univ. Ank. Series A1 Math. Stat. 55 pp 1–

[10] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052

[11] G. F.~Birkenmeier, H. E.~Heatherly and E. K.~Lee, Ring Theory, eds. S. K.~Jain and S. T.~Rizvi (World Scientific, Singapore, 1993)~pp. 102–129.

[12] DOI: 10.1016/j.jpaa.2007.06.010 · Zbl 1162.16021 · doi:10.1016/j.jpaa.2007.06.010

[13] Cedó F., Comm. Algebra 19 pp 1983–

[14] Chen W., Houston J. Math. 33 pp 341–

[15] DOI: 10.1112/S0024609399006116 · Zbl 1021.16019 · doi:10.1112/S0024609399006116

[16] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9

[17] Faith C., Comm. Algebra 19 pp 1967–

[18] Ferrero M., Math. J. Okayama Univ. 29 pp 119–

[19] DOI: 10.1080/00927878508823160 · Zbl 0555.16003 · doi:10.1080/00927878508823160

[20] Ferrero M., J. London Math. Soc. 28 pp 8–

[21] Hashemi E., Acta Math. Hungar. 107 pp 207– · Zbl 1081.16032 · doi:10.1007/s10474-005-0191-1

[22] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6

[23] DOI: 10.1016/S0022-4049(99)00020-1 · Zbl 0982.16021 · doi:10.1016/S0022-4049(99)00020-1

[24] DOI: 10.1081/AGB-120016752 · Zbl 1042.16014 · doi:10.1081/AGB-120016752

[25] DOI: 10.1016/j.jpaa.2004.08.025 · Zbl 1071.16020 · doi:10.1016/j.jpaa.2004.08.025

[26] DOI: 10.1142/S100538670600023X · Zbl 1095.16014 · doi:10.1142/S100538670600023X

[27] DOI: 10.1016/j.jpaa.2005.01.009 · Zbl 1078.16030 · doi:10.1016/j.jpaa.2005.01.009

[28] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179

[29] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017

[30] DOI: 10.1016/S0022-4049(03)00109-9 · Zbl 1040.16021 · doi:10.1016/S0022-4049(03)00109-9

[31] Krempa J., Fund. Math. 76 pp 121–

[32] Krempa J., Fund. Math. 85 pp 57–

[33] Krempa J., Algebra Colloq. 3 pp 289–

[34] DOI: 10.1007/978-1-4684-0406-7· doi:10.1007/978-1-4684-0406-7

[35] DOI: 10.1080/00927879708826000 · Zbl 0879.16016 · doi:10.1080/00927879708826000

[36] DOI: 10.4153/CMB-1971-065-1 · Zbl 0217.34005 · doi:10.4153/CMB-1971-065-1

[37] Lee T. K., Houston J. Math. 29 pp 583–

[38] DOI: 10.1081/AGB-120037221 · Zbl 1068.16037 · doi:10.1081/AGB-120037221

[39] DOI: 10.4064/cm113-1-9 · Zbl 1165.16014 · doi:10.4064/cm113-1-9

[40] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6

[41] DOI: 10.1017/S0004972709001178 · Zbl 1198.16025 · doi:10.1017/S0004972709001178

[42] Moussavi A., J. Korean Math. Soc. 42 pp 353– · Zbl 1090.16012 · doi:10.4134/JKMS.2005.42.2.353

[43] DOI: 10.1080/00927870701718849 · Zbl 1142.16016 · doi:10.1080/00927870701718849

[44] DOI: 10.1090/conm/419/08010· doi:10.1090/conm/419/08010

[45] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14

[46] DOI: 10.1006/jabr.2000.8451 · Zbl 0969.16006 · doi:10.1006/jabr.2000.8451

[47] DOI: 10.1080/00927870701649374 · Zbl 1143.16030 · doi:10.1080/00927870701649374

[48] DOI: 10.1080/00927870500441981 · Zbl 1087.16016 · doi:10.1080/00927870500441981

[49] DOI: 10.1090/S0002-9939-1976-0419512-6· doi:10.1090/S0002-9939-1976-0419512-6

Nasr-Isfahani, A. R.; Moussavi, A.

A generalization of reduced rings. (English) Zbl 1259.16033

J. Algebra Appl. 11, No. 4, Article ID 1250070, 30 p. (2012).

Let R be a ring with 1, δ a derivation of R and $R[x;\delta]$ the differential polynomial ring with the usual addition and multiplication such that $xa = ax + \delta(a)$ for all $a \in R$. Then R is called a δ-Armendariz ring if for each $f(x) = \sum_{i=0}^{n} a_i x^i$, $g(x) = \sum_{j=0}^{m} b_j x^j \in R[x;\delta]$, $f(x)g(x) = 0$ implies $a_i\delta^i(b_j) = 0$ for all i, j. A ring R is called weak δ-Armendariz if the above condition holds for $n = m = 1$. Then the authors show some properties of the radicals of R and relations between R and $R[x;\delta]$ for a weak δ-Armendariz ring R.

Theorem 1. Let $N_0(R)$, $\mathrm{Nil}_*(R)$, L-rad(R), $\mathrm{Nil}^*(R)$ be the Wedderburn, lower nil, Levitzky, and upper nil radical, respectively. If R is weak δ-Armendariz, then

(1) the above radicals are equal; and

(2) let $J(R[x;\delta])$ be the Jacobson radical of $R[x;\delta]$. Then $J(R[x;\delta]) \cap R$ is a nil ideal of R.

If R is δ-Armendariz, then the above radicals of $R[x;\delta]$ are equal.

Theorem 2. Let R be a δ-Armendariz ring. Then R is reversible (resp. symmetric, δ-quasi Baer, δ-Baer, p.p.-Baer) if and only if so is $R[x;\delta]$ (resp. symmetric, δ-quasi Baer, δ-Baer, p.p.-Baer). Moreover, a reduced ring R with a δ is characterized in terms of some differential Armendariz matrix rings. Also an Ore ring R with a δ which is a (weak) δ-Armendariz ring is characterized in terms of the (weak) differential classical left quotient ring of R where the derivation is induced by δ of R.

Reviewer: George Szeto (Peoria)

MSC:

16S36	Ordinary and skew polynomial rings and semigroup rings
16N80	General radicals and associative rings
16N20	Jacobson radical, quasimultiplication
16N40	Nil and nilpotent radicals, sets, ideals, associative rings
16P60	Chain conditions on annihilators and summands: Goldie-type conditions

Cited in **7** Documents

Keywords:

differential polynomial rings; radicals; Jacobson radical; prime radical; 2-primal rings; Baer rings; Armendariz rings

Full Text: DOI

References:

[1] DOI: 10.1090/S0002-9939-1956-0075933-2· doi:10.1090/S0002-9939-1956-0075933-2

[2] DOI: 10.4153/CJM-1956-040-9 · Zbl 0072.02404 · doi:10.4153/CJM-1956-040-9

[3] DOI: 10.1080/00927879808826274 · Zbl 0915.13001 · doi:10.1080/00927879808826274

[4] DOI: 10.1080/00927879908826596 · Zbl 0929.16032 · doi:10.1080/00927879908826596

[5] DOI: 10.1017/S1446788700029190 · Zbl 0292.16009 · doi:10.1017/S1446788700029190

[6] DOI: 10.1080/00927878708823556 · Zbl 0629.16002 · doi:10.1080/00927878708823556
[7] DOI: 10.1017/S0004972700042052 · Zbl 0191.02902 · doi:10.1017/S0004972700042052
[8] G. F.~Birkenmeier, H. E.~Heatherly and E. K.~Lee, Ring Theory, eds. S. K.~Jain and S. T.~Rizvi (World Scientific, Singapore, 1993)~pp. 102–129.
[9] DOI: 10.1016/S0022-4049(00)00055-4 · Zbl 0987.16018 · doi:10.1016/S0022-4049(00)00055-4
[10] DOI: 10.1081/AGB-100001530 · Zbl 0991.16005 · doi:10.1081/AGB-100001530
[11] Cedó F., Comm. Algebra 19 pp 1983–
[12] DOI: 10.1215/S0012-7094-67-03446-1 · Zbl 0204.04502 · doi:10.1215/S0012-7094-67-03446-1
[13] DOI: 10.5565/PUBLMAT_33289_09 · Zbl 0702.16015 · doi:10.5565/PUBLMAT$_3$3289$_0$9
[14] Ferrero M., Math. J. Okayama Univ. 29 pp 119–
[15] DOI: 10.1080/00927878508823160 · Zbl 0555.16003 · doi:10.1080/00927878508823160
[16] Ferrero M., J. London Math. Soc. 28 pp 8–
[17] Goodearl K. R., An Introduction to Noncommutative Noetherian Rings (1989) · Zbl 0679.16001
[18] DOI: 10.1080/00927870008827058 · Zbl 0965.16015 · doi:10.1080/00927870008827058
[19] DOI: 10.1016/S0022-4049(01)00053-6 · Zbl 1007.16020 · doi:10.1016/S0022-4049(01)00053-6
[20] Huh C., Comm. Algebra 26 pp 595–
[21] DOI: 10.1081/AGB-120013179 · Zbl 1023.16005 · doi:10.1081/AGB-120013179
[22] Jordan D. A., J. London Math. Soc. 10 pp 281–
[23] Kaplansky I., Rings of Operators (1965) · Zbl 0174.18503
[24] DOI: 10.1016/0021-8693(90)90057-U · Zbl 0719.16015 · doi:10.1016/0021-8693(90)90057-U
[25] DOI: 10.1006/jabr.1999.8017 · Zbl 0957.16018 · doi:10.1006/jabr.1999.8017
[26] Lam T. Y., A First Course in Noncommutative Rings (2000)
[27] DOI: 10.1080/00927879708826000 · Zbl 0879.16016 · doi:10.1080/00927879708826000
[28] Lee T. K., Houston J. Math. 29 pp 583–
[29] DOI: 10.1081/AGB-120037221 · Zbl 1068.16037 · doi:10.1081/AGB-120037221
[30] DOI: 10.1007/978-1-4612-1978-1_19· doi:10.1007/978-1-4612-1978-1$_1$9
[31] DOI: 10.1080/00927879908826705 · Zbl 0957.16019 · doi:10.1080/00927879908826705
[32] DOI: 10.1081/AGB-100002173 · Zbl 1005.16027 · doi:10.1081/AGB-100002173
[33] DOI: 10.1016/S0021-8693(03)00301-6 · Zbl 1045.16001 · doi:10.1016/S0021-8693(03)00301-6
[34] McConnell J. C., Noncommutative Noetherian Rings (1987) · Zbl 0644.16008
[35] DOI: 10.1080/00927870802104337 · Zbl 1154.16019 · doi:10.1080/00927870802104337
[36] DOI: 10.1215/S0012-7094-70-03718-X · Zbl 0219.16010 · doi:10.1215/S0012-7094-70-03718-X
[37] DOI: 10.3792/pjaa.73.14 · Zbl 0960.16038 · doi:10.3792/pjaa.73.14
[38] DOI: 10.1090/S0002-9947-1973-0338058-9· doi:10.1090/S0002-9947-1973-0338058-9
[39] Smoktunowicz A., J. Algebra 223 pp 427– · Zbl 1126.16013
[40] DOI: 10.1090/S0002-9939-1976-0419512-6· doi:10.1090/S0002-9939-1976-0419512-6