

The right core inverses of a product and a companion matrix

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Abstract: In this paper, characterizations of right core inverse by one-sided invertibility are given. The necessary and sufficient conditions, which guarantee that pq have right core inverses are investigated. Furthermore, characterizations of right core inverses of triangular matrices, 2×2 matrices and a companion matrix are considered.

REFERENCES

1. O.M. Baksalary , G. Trenkler, *Core inverse of matrices*, Linear Multilinear Algebra. **58** (2010), 681–697.
2. J. L. Chen, *A note on generalized inverses of a product*, Northeast Math.J. **12** (1996), 431–440.
3. J. L. Chen, H. H. Zhu, P. Patrício, Y. L. Zhang, *Characterizations and representations of core and dual core inverses*, Canad. Math. Bull. **60(2)** (2017), 269–282.
4. M.P. Drazin, *A class of outer generalized inverses*, Linear Algebra Appl. **436** (2012), 1909–1923.
5. M.P. Drazin, *Left and right generalized inverses*, Linear Algebra Appl. **510** (2016), 64–78.
6. N. Castro-González, J.L. Chen, L. Wang, *Further results on generalized inverses in rings with involution*, Electron. J.Linear Algebra. **30** (2015), 118–134.
7. R.E. Hartwig, *Block generalized inverses*, Arch. Ration. Mech. Anal. **61** (1976), 197–251.
8. Y. Y. Ke, L. Wang, J. L. Chen, *The core inverse of a product and 2×2 matrices*, Bull. Malays. Math. Sci. Soc. **42** (2019), 51–66.
9. T. Y. Lam, *A First Course in Noncommutative Rings*, Graduate Text in Mathematics. 2nd ed. Vol.131. Berlin: Springer-Verlag; (2001).
10. T. T. Li, J. L. Chen, *Characterizations of core and dual core inverses in rings with involution*, Linear Multilinear Algebra. **66(4)** (2018), 717–730.
11. T. T. Li, J. L. Chen, *The core invertibility of a companion matrix and a Hankel matrix* Linear Multilinear Algebra. (2018), DOI: 10.1080/03081087.2018.1508410
12. R. Puystjens, R. E. Hartwig, *The group inverse of a companion matrix*, Linear Multilinear Algebra. **43(1-3)** (1997), 137–150.
13. D. S. Rakíc, N. C. Dinćic, D. S. Djordievic, *Group, Moore-Penrose, core and dual core inverse in rings with involution*, Linear Algebra Appl. **463** (2014), 115–133.
14. S. Z. Xu, J. L. Chen, X. X. Zhang, *New characterizations for core and dual core inverses in rings with involution*, Front. Math. China. **12(1)** (2017), 231–246.
15. L. Wang, D. Mosić, *The one-sided inverse along two elements in rings*, Linear Multilinear Algebra. Accepted
16. L. Wang, D. Mosić, Y. F. Gao, *Right core inverse and the related generalized inverses*, (2018), arXiv:1804.00688v1.
17. H. H. Zhu, J. L. Chen, P. Patrício, *Reverse order law for the inverse along an element*, Linear Multilinear Algebra. **65(1)** (2017), 166–177.
18. H. H. Zhu, J. L. Chen, P. Patrício, X. Mary, *Centralizers applications to the inverse along an element*, Appl Math Comput. **315** (2017), 27–33.
19. H. H. Zhu, X. X. Zhang, J. L. Chen, *Generalized inverses of a factorization in a ring with involution*, Linear Algebra Appl. **472** (2015), 142–150.

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