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AUTOMORPHISMS OF SOME STRUCTURAL INFINITE MATRIX RINGS

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Abstract. We define an analog of a structural matrix ring in the ring of column-finite infinite matrices. We describe the form of its automorphisms.

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REFERENCES

[1] M. AKKURT, E. AKKURT, G. P. BARKER, *Automorphisms of structural matrix algebras*, Oper. Matrices **7**, 2 (2013), 431–439.
[2] S. P. COELHO, *Automorphisms groups of certain algebras of triangular matrices*, Arch. Math. **61**, 2 (1993), 119–123.
[3] S. P. COELHO, *The automorphism group of a structural matrix algebra*, Linear Algebra Appl. **195** (1993), 35–58.
[4] S. P. COELHO, *Automorphism groups of certain structural matrix rings*, Comm. Algebra **22**, 14 (1994), 5567–5586.
[5] S. DĂSCĂLESCU, L. VAN WYK, *Do isomorphic structural matrix rings have isomorphic graphs?*, Proc. Amer. Math. Soc. **124**, 5 (1996), 1385–1391.
[6] S. FOLDES, *Fundamental structures of ring and discrete mathematics*, Wiley, New York, 1994.
[7] S. FOLDES, G. MELETIOU, *On incidence rings and triangular matrices*, Rutcor Res. Report, vol. **2002**, no. **35**, 2002.
[8] S. FOLDES, G. MELETIOU, *Some remarks on structural matrix rings and matrices with ideal entries*, Miskolc Math. Notes **12**, 1 (2011), 25–29.
[9] R. A. HORN, C. R. JOHNSON, *Matrix analysis*, Cambridge University Press, Cambridge, 1990.
[10] S. JØNDRUP, *The group of automorphisms of certain subalgebras of matrix algebras*, J. Algebra **141**, 1 (1991), 106–114.
[11] T. P. KEZLAN, *A note on algebra automorphisms of triangular matrices over commutative rings*, Linear Algebra Appl. **135**, (1990), 181–184.
[12] A. D. SANDS, *Radicals of structural matrix rings*, Quaestiones Mathematicae **13**, 1 (1990), 77–81.
[13] R. SŁOWIK, *Maps on infinite triangular matrices preserving idempotents*, Linear Multilinear Algebra **62**, 7 (2014), 938–964.
[14] K. C. SMITH, L. VAN WYK, *An internal characterisation of structural matrix rings*, Comm. Algebra **22**, 14 (1994), 5599–5622.
[15] L. VAN WYK, *Maximal left ideals in structural matrix rings*, Comm. Algebra **16**, 2 (1988), 399–419.
[16] L. VAN WYK, *Special radicals in structural matrix rings*, Comm. Algebra **16**, 2 (1988), 421–435.
[17] L. VAN WYK, *A link between a natural centralizer and the smallest essential ideal in structural matrix rings*, Comm. Algebra **27**, 8 (1999), 3675–3683.
[18] A. M. VERSHIK, S. V. KEROV, *On an infinite-dimensional group over a finite field* (in Russian), Funktsional. Anal. i Prilozhen. **32**, 3 (1998), 3–10; English translation in Funct. Anal. Appl. **32**, 3 (1998), 147–152 (1999).
[19] S. WANG, *The Jordan normal form of infinite matrices*, Chinese Sci. Bull. **441**, 23 (1996), 1943–1945.

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