

ORTHOGONALITY GRAPH OF THE ALGEBRA OF UPPER TRIANGULAR MATRICES

B. R. BAKHADLY

Abstract. We study the connectedness and the diameter of orthogonality graphs of upper triangular matrix algebras over arbitrary fields.

Mathematics subject classification (2010): 15A24, 05C50.

Keywords and phrases: Orthogonality, graphs, upper triangular, matrices.

REFERENCES

- [1] S. AKBARI, M. GHANDEHARI, M. HADIAN, A. MOHAMMADIAN, *On commuting graphs of semisimple rings*, Linear Algebra Appl. **390** (2004), 345–355.
- [2] S. AKBARI, A. MOHAMMADIAN, *On the zero-divisor graph of a commutative ring*, J. Algebra **274** (2004), 847–855.
- [3] S. AKBARI, A. MOHAMMADIAN, *Zero-divisor graphs of non-commutative rings*, J. Algebra **296** (2006), 462–479.
- [4] S. AKBARI, A. MOHAMMADIAN, H. RADJAVI, P. RAJA, *On the diameters of commuting graphs*, Linear Algebra Appl. **418** (2006), 161–176.
- [5] S. AKBARI, P. RAJA, *Commuting graphs of some subsets in simple rings*, Linear Algebra Appl. **416** (2006), 1038–1047.
- [6] B. R. BAKHADLY, A. E. GUTERMAN, O. V. MARKOVA, *Graphs defined by orthogonality*, Computational methods and algorithms. Part XXVII, Zap. Nauchn. Sem. POMI **428** (2014), 49–80 (in Russian). Journal of Mathematical Sciences (New York) **207**: 5 (2015), 698–717 (in English).
- [7] J. K. BAKSALARY, J. HAUKE, *A further algebraic version of Cochran's theorem and matrix partial orderings*, Linear Algebra Appl. **127** (1990), 157–169.
- [8] T. FENSTERMACHER, E. GEGNER, *Zero-Divisor Graphs of 2×2 Upper Triangular Matrix Rings Over \mathbb{Z}_n* , Missouri Journal of Math. Sciences **26**: 2 (2014), 151–167.
- [9] A. E. GUTERMAN, M. A. EFIMOV, *Monotone maps on matrices of index one*, Zap. Nauchn. Sem. POMI **405** (2012), 67–96 (in Russian). Journal of Mathematical Sciences (New York) **191**: 1 (2013), 36–51 (in English).
- [10] F. HARARY, *Graph Theory*, Addison Wesley, 1969.
- [11] A. LI, R. P. TUCCI, *Zero Divisor Graphs of Upper Triangular Matrix Rings*, Communications in Algebra **41**: 12 (2013), 4622–4636.
- [12] B. LI, *Zero-Divisor Graph of Triangular Matrix Rings over Commutative Rings*, International Journal of Algebra **5**: 6 (2011), 255–260.
- [13] P. G. OVCHINNIKOV, *Automorphisms of the poset of skew projections*, J. of Functional Analysis **115** (1993), 184–189.
- [14] P. ŠEMRL, *Order-preserving maps on the poset of idempotent matrices*, Acta Sci. Math. (Szeged) **69** (2003), 481–490.