EVERY 8-TRACEABLE ORIENTED GRAPH IS TRACEABLE

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Abstract

A digraph of order n is k -traceable if $n \geq k$ and each of its induced subdigraphs of order k is traceable. It is known that if $2 \leq k \leq 6$, every k -traceable oriented graph is traceable but for $k = 7$ and for each $k \geq 9$, there exist k -traceable oriented graphs that are nontraceable. We show that every 8-traceable oriented graph is traceable.

Keywords: oriented graph, traceable, hypotraceable, k -traceable, generalized tournament.

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REFERENCES

- [1] S.A. van Aardt, A.P. Burger, J.E. Dunbar, M. Frick, J.M. Harris and J.E. Singleton, *An iterative approach to the Traceability Conjecture for Oriented Graphs*, Electron. J. Combin. **201** (2013) #P59.
- [2] S.A. van Aardt, A.P. Burger, M. Frick, B. Llano and R. Zuazua, *Infinite families of 2-hypohamiltonian/2-hypotraceable oriented graphs*, Graphs Combin. **30** (2014) 783–800.
doi:0.1007/s00373-013-1312-1
- [3] S.A. van Aardt, J.E. Dunbar, M. Frick, P. Katrenič, M.H. Nielsen and O.R. Oellermann, *Traceability of k -traceable oriented graphs*, Discrete Math. **310** (2010) 1325–1333.
doi:10.1016/j.disc.2009.12.022

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- [4] S.A. van Aardt, J.E. Dunbar, M. Frick and M.H. Nielsen, *Cycles in k -traceable oriented graphs*, Discrete Math. **311** (2011) 2085–2094.
doi:10.1016/j.disc.2011.05.032
- [5] S.A. van Aardt, J.E. Dunbar, M. Frick, M.H. Nielsen and O.R. Oellermann, *A traceability conjecture for oriented graphs*, Electron. J. Combin. **15** (2008) #R150.
- [6] S.A. van Aardt, M. Frick, P. Katrenič and M.H. Nielsen, *The order of hypotraceable oriented graphs*, Discrete Math. **11** (2011) 1273–1280.
doi:10.1016/j.disc.2011.03.009
- [7] A.P. Burger, *Computational results on the traceability of oriented graphs of small order*, Electron. J. Combin. **20** (2013) #P23.
- [8] J. Bang-Jensen and G. Gutin, *Digraphs: Theory, Algorithms and Applications*, Second Ed. (Springer-Verlag, London, 2009).
doi:10.1007/978-1-84800-998-1
- [9] M. Frick and P. Katrenič, *Progress on the traceability conjecture*, Discrete Math. Theor. Comput. Sci. **10** (2008) 105–114.
- [10] M. Grötschel and Y. Wakabayashi, *Constructions of hypotraceable digraphs*, in: Mathematical Programming, R.W. Cottle, M.L. Kelmanson and B. Korte (Ed(s)), (Elsevier Science Publishers B.V., 1984).

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