REMARKS ON DYNAMIC MONOPOLIES WITH GIVEN AVERAGE THRESHOLDS

CARMEN C. CENTENO

*Pontifícia Universidade Católica de Goiás
Goiás, Brazil*

e-mail: cecilia@pucgoias.edu.br

AND

DIETER RAUTENBACH

*Institute of Optimization and Operations Research
Ulm University, Ulm, Germany*

e-mail: dieter.rautenbach@uni-ulm.de

Abstract

Dynamic monopolies in graphs have been studied as a model for spreading processes within networks. Together with their dual notion, the generalized degenerate sets, they form the immediate generalization of the classical notions of vertex covers and independent sets in a graph. We present results concerning dynamic monopolies in graphs of given average threshold values extending and generalizing previous results of Khoshkhan *et al.* [*On dynamic monopolies of graphs: The average and strict majority thresholds*, Discrete Optimization **9** (2012) 77–83] and Zaker [*Generalized degeneracy, dynamic monopolies and maximum degenerate subgraphs*, Discrete Appl. Math. **161** (2013) 2716–2723].

Keywords: dynamic monopoly, degenerate set, vertex cover, independent set.

2010 Mathematics Subject Classification: 05C69.

REFERENCES

- [1] N. Alon, J. Kahn and P.D. Seymour, *Large induced degenerate subgraphs*, Graphs Combin. **3** (1987) 203–211.
doi:10.1007/BF01788542

- [2] N. Alon, D. Mubayi and R. Thomas, *Large induced forests in sparse graphs*, J. Graph Theory **38** (2001) 113–123.
doi:10.1002/jgt.1028
- [3] P. Borowiecki, F. Göring, J. Harant and D. Rautenbach, *The potential of greed for independence*, J. Graph Theory **71** (2012) 245–259.
doi:10.1002/jgt.20644
- [4] R.L. Brooks, *On colouring the nodes of a network*, Proc. Cambridge Philos. Soc. **37** (1941) 194–197.
doi:10.1017/S030500410002168X
- [5] Y. Caro, *New results on the independence number*, Technical Report, Tel-Aviv University, 1979.
- [6] K. Khoshkhah, H. Soltani and M. Zaker, *On dynamic monopolies of graphs: The average and strict majority thresholds*, Discrete Optimization **9** (2012) 77–83.
doi:10.1016/j.disopt.2012.02.001
- [7] V.K. Wei, *A lower bound on the stability number of a simple graph*, Technical Memorandum, TM 81-11217-9, Bell Laboratories, 1981.
- [8] M. Zaker, *Generalized degeneracy, dynamic monopolies and maximum degenerate subgraphs*, Discrete Appl. Math. **161** (2013) 2716–2723.
doi:10.1016/j.dam.2013.04.012

Received 5 September 2013

Revised 18 March 2014

Accepted 18 March 2014