ON THE SIGNED (TOTAL) k -INDEPENDENCE NUMBER IN GRAPHS

ABDOLLAH KHODKAR

Department of Mathematics
University of West Georgia
Carrollton, GA 30118, USA

e-mail: akhodkar@westga.edu

BABAK SAMADI

Department of Mathematics
Arak University
Arak, Iran

e-mail: b-samadi@araku.ac.ir

AND

LUTZ VOLKMANN

Lehrstuhl II für Mathematik
RWTH Aachen University
52056 Aachen, Germany

e-mail: volkm@math2.rwth-aachen.de

Abstract

Let G be a graph. A function $f : V(G) \rightarrow \{-1, 1\}$ is a signed k -independence function if the sum of its function values over any closed neighborhood is at most $k - 1$, where $k \geq 2$. The signed k -independence number of G is the maximum weight of a signed k -independence function of G . Similarly, the signed total k -independence number of G is the maximum weight of a signed total k -independence function of G . In this paper, we present new bounds on these two parameters which improve some existing bounds.

Keywords: domination in graphs, signed k -independence, limited packing, tuple domination.

2010 Mathematics Subject Classification: 05C69.

REFERENCES

- [1] M. Chellali, O. Favaron, A. Hansberg and L. Volkmann, *k*-domination and *k*-independence in graphs: A survey, *Graphs Combin.* **28** (2012) 1–55.
doi:10.1007/s00373-011-1040-3
- [2] R. Gallant, G. Gunther, B.L. Hartnell and D.F. Rall, *Limited packing in graphs*, *Discrete Appl. Math.* **158** (2010) 1357–1364.
doi:10.1016/j.dam.2009.04.014
- [3] A.N. Ghameshlou, A. Khodkar and S.M. Sheikholeslami, *On the signed bad numbers of graphs*, *Bulletin of the ICA* **67** (2013) 81–93.
- [4] F. Harary and T.W. Haynes, *Double domination in graphs*, *Ars Combin.* **55** (2000) 201–213.
- [5] V. Kulli, *On n -total domination number in graphs*, in: *Graph Theory, Combinatorics, Algorithms and Applications*, SIAM (Philadelphia, 1991) 319–324.
- [6] D.A. Mojdeh, B. Samadi and S.M. Hosseini Moghaddam, *Limited packing vs tuple domination in graphs*, *Ars Combin.*, to appear.
- [7] D.A. Mojdeh, B. Samadi and S.M. Hosseini Moghaddam, *Total limited packing in graphs*, submitted.
- [8] L. Volkmann, *Signed k -independence in graphs*, *Cent. Eur. J. Math.* **12** (2014) 517–528.
doi:10.2478/s11533-013-0357-y
- [9] L. Volkmann, *Signed total k -independence number in graphs*, *Util. Math.*, to appear.
- [10] H.C. Wang and E.F. Shan, *Signed total 2-independence in graphs*, *Util. Math.* **74** (2007) 199–206.
- [11] H.C. Wang, J. Tong and L. Volkmann, *A note on signed total 2-independence in graphs*, *Util. Math.* **85** (2011) 213–223.
- [12] D.B. West, *Introduction to Graph Theory* (Second Edition) (Prentice Hall, USA, 2001).

Received 23 September 2014

Revised 11 February 2015

Accepted 11 February 2015