

A NOTE ON THE INTERVAL FUNCTION OF A DISCONNECTED GRAPH

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Abstract

In this note we extend the Mulder-Nebeský characterization of the interval function of a connected graph to the disconnected case. One axiom needs to be adapted, but also a new axiom is needed in addition.

Keywords: interval function, transit function, axiomatic characterization, disconnected graph.

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REFERENCES

- [1] K. Balakrishnan, M. Changat, A.K. Lakshmikuttyamma, J. Mathew, H.M. Mulder, P.G. Narasimha-Shenoi and N. Narayanan, *Axiomatic characterization of the interval function of a block graph*, Discrete Math. **338** (2015) 885–894.
doi:10.1016/j.disc.2015.01.004
- [2] M. Changat, S. Klavžar and H.M. Mulder, *The all-paths transit function of a graph*, Czechoslovak Math. J. **51** (2001) 439–448.
doi:10.1023/A:1013715518448
- [3] M. Changat and J. Mathew, *Induced path transit function, monotone and Peano axioms*, Discrete Math. **28** (2004) 185–194.
doi:10.1016/j.disc.2004.02.017
- [4] M. Changat, H.M. Mulder and G. Sierksma, *Convexities related to path properties on graphs*, Discrete Math. **290** (2005) 117–131.
doi:10.1016/j.disc.2003.07.014
- [5] M. Changat, J. Mathew and H.M. Mulder, *Induced path transit function, betweenness and monotonicity*, Electron. Notes Discrete Math. **15** (2003) 60–63.
doi:10.1016/S1571-0653(04)00531-1
- [6] M. Changat, J. Mathew and H.M. Mulder, *The induced path function, monotonicity and betweenness*, Discrete Appl. Math. **158** (2010) 426–433.
doi:10.1016/j.dam.2009.10.004
- [7] M. Changat, A.K. Lakshmikuttyamma, J. Mathew, I. Peterin, P.G. Narasimha-Shenoi, G. Seethakuttyamma and S. Špacapan, *A forbidden subgraph characterization of some graph classes using betweenness axioms*, Discrete Math. **313** (2013) 951–958.
doi:10.1016/j.disc.2013.01.013
- [8] P. Duchet, *Convex sets in graphs II. Minimal path convexity*, J. Combin. Theory Ser. B **44** (1988) 307–316.
doi:10.1016/0095-8956(88)90039-1
- [9] M.A. Morgana and H.M. Mulder, *The induced path convexity, betweenness and svelte graphs*, Discrete Math. **254** (2002) 349–370.
doi:10.1016/S0012-365X(01)00296-5
- [10] H.M. Mulder, *The Interval Function of a Graph* (MC Tracts 132, Mathematisch Centrum, Amsterdam, 1980).
- [11] H.M. Mulder, *Transit functions on graphs (and posets)*, in: Convexity in Discrete Structures (M. Changat, S. Klavžar, H.M. Mulder, A. Vijayakumar, Eds.), Lecture Notes Ser. 5, Ramanujan Math. Soc. (2008) 117–130.
- [12] H.M. Mulder and L. Nebeský, *Axiomatic characterization of the interval function of a graph*, European J. Combin. **30** (2009) 1172–1185.
doi:10.1016/j.ejc.2008.09.007
- [13] L. Nebeský, *A characterization of the interval function of a connected graph*, Czechoslovak Math. J. **44** (1994) 173–178.

- [14] L. Nebeský, *Characterizing the interval function of a connected graph*, Math. Bohem. **123** (1998) 137–144.
- [15] L. Nebeský, *The interval function of a connected graph and a characterization of geodesic graphs*, Math. Bohem. **126** (2001) 247–254.
- [16] L. Nebeský, *A characterization of the interval function of a (finite or infinite) connected graph*, Czechoslovak Math. J. **51** (2001) 635–642.
doi:10.1023/A:1013744324808
- [17] L. Nebeský, *The induced paths in a connected graph and a ternary relation determined by them*, Math. Bohem. **127** (2002) 397–408.

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