NOTE

A NOTE ON *PM*-COMPACT BIPARTITE GRAPHS¹

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Abstract

A graph is called perfect matching compact (briefly, *PM*-compact), if its perfect matching graph is complete. Matching-covered *PM*-compact bipartite graphs have been characterized. In this paper, we show that any *PM*-compact bipartite graph G with $\delta(G) \geq 2$ has an ear decomposition such that each graph in the decomposition sequence is also *PM*-compact, which implies that G is matching-covered.

Keywords: perfect matching, *PM*-compact graph, matching-covered graph.

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REFERENCES

- [1] H. Bian and F. Zhang, *The graph of perfect matching polytope and an extreme problem*, Discrete. Math. **309** (2009) 5017–5023.
doi:10.1016/j.disc.2009.03.009
- [2] J.A. Bondy and U.S.R. Murty, *Graph Theory* (Springer-Verlag, Berlin, 2008).
- [3] L. Lovász and M.D. Plummer, *Matching Theory* (Elsevier Science Publishers, B.V. North Holland, 1986).

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- [4] V. Chvátal, *On certain polytopes associated with graphs*, J. Combin. Theory (B) **18** (1975) 138–154.
doi:10.1016/0095-8956(75)90041-6
- [5] D.J. Naddef and W.R. Pulleyblank, *Hamiltonicity in $(0 - 1)$ -polytope*, J. Combin. Theory (B) **37** (1984) 41–52.
doi:10.1016/0095-8956(84)90043-1
- [6] M.W. Padberg and M.R. Rao, *The travelling salesman problem and a class of polyhedra of diameter two*, Math. Program. **7** (1974) 32–45.
doi:10.1007/BF01585502
- [7] X.M. Wang, Y.X. Lin, M.H. Carvalho, C.L. Lucchesi, G. Sanjith and C.H.C. Little, *A characterization of PM-compact bipartite graphs and near-bipartite graphs*, (2012) in submission.

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