

NOTE

A NOTE ON A BROKEN-CYCLE THEOREM FOR HYPERGRAPHS

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Abstract

Whitney's Broken-cycle Theorem states the chromatic polynomial of a graph as a sum over special edge subsets. We give a definition of cycles in hypergraphs that preserves the statement of the theorem there.

Keywords: Broken-cycle Theorem, hypergraphs, cycles, chromatic polynomial, graph polynomials.

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REFERENCES

- [1] C. Berge, *Hypergraphs*, Vol. 45 (North-Holland Mathematical Library, North-Holland, 1989).
- [2] K. Dohmen, *A broken-circuits-theorem for hypergraphs*, Arch. Math. **64** (1995) 159–162.
doi:10.1007/BF01196637
- [3] F.M. Dong, K.M. Koh, and K.L. Teo, *Chromatic polynomials and chromaticity of graphs* (World Scientific Publishing, 2005).
- [4] P. Jégou and S.N. Ndiaye, *On the notion of cycles in hypergraphs*, Discrete Math. **309** (2009) 6535–6543.
doi:10.1016/j.disc.2009.06.035
- [5] M. Trinks, *Graph polynomials and their representations*, PhD Thesis, Technische Universität Bergakademie Freiberg, (2012).
- [6] H. Whitney, *The coloring of graphs*, Proc. Natl. Acad. Sci. USA **17**(2) (1931) 122–125.
doi:10.1073/pnas.17.2.122
- [7] H. Whitney, *A logical expansion in mathematics*, Bull. Amer. Math. Soc. **38**(8) (1932) 572–579.
doi:10.1090/S0002-9904-1932-05460-X

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