

Perfect matchings of regular bipartite graphs

EDITA ROLLOVÁ

(in collaboration with Robert Lukotka)

NTIS- New Technologies for the Information Society, Faculty of Applied Sciences, University of West Bohemia, Pilsen, Czech republic

Let G be a regular bipartite graph and $X \subseteq E(G)$. We show that there exist perfect matchings of G containing both, odd and even number of edges from X if and only if the signed graph (G, X) , that is a graph G with exactly the edges from X being negative, is not equivalent to (G, \emptyset) . In fact, we prove that for a given signed regular bipartite graph with minimum signature, it is possible to find perfect matchings that contain exactly no negative edge or arbitrary one preselected negative edge. Moreover, if the underlying graph is cubic, there exists a perfect matching with exactly two preselected negative edges.