

On incomplete tournaments scheduling

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(joint work with Tereza Kovářová and Adam Silber)

The classical topic of scheduling tournaments corresponds to 1-factorizations of complete graphs. Scheduling incomplete tournaments corresponds to 1-factorizations of graphs that are not complete, though usually regular. Incomplete tournaments offer the possibility to incorporate additional restrictions on the choice of matches that are played and that are not played. One direction explores the connection to magic-type labelings that allow to influence the overall difficulty of the tournament for each player or team. Let $G = (V, E)$ be a graph with n vertices. A distance magic labeling of G is a bijection $f : V \rightarrow \{1, 2, \dots, n\}$ such that for every vertex $v \in V(G)$ the weight $w(v) = \sum_{u \in N(v)} f(u)$ is the same fixed integer k . If G allows a distance magic labeling, then we say G is a distance magic graph. A handicap labeling of G is a bijection $f : V \rightarrow \{1, 2, \dots, n\}$ such that for every vertex $v \in V(G)$ the weight $w(v) = \sum_{u \in N(v)} f(u)$ is $\ell + f(v)$, where ℓ is some fixed integer. If G allows a handicap labeling, then we say G is a handicap graph. If the vertex labels correspond to the relative strength (or rank) of the players, then a distance magic graph represents a tournament in which players enjoy the same relative difficulty [1]. A handicap graph represents a tournament which is tougher for stronger player and thus more attractive to the general audience. The existence of r -regular distance magic graphs and r -regular handicap graphs of every even order was completely settled in a recent series of papers by several authors [2, 3]. For odd orders several results were obtained, but a complete classification of regularities of both distance magic graphs and handicap graphs of odd order is still far from complete. Moreover, the question of the scheduling (1-factorizations) such tournaments became studied only recently. In this talk we show some recent results on scheduling incomplete tournaments.

REFERENCES

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