Competition hypergraphs of digraphs with certain properties
II. Hamiltonicity

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Abstract

If $D = (V, A)$ is a digraph, its competition hypergraph $CH(D)$ has vertex set $V$ and $e \subseteq V$ is an edge of $CH(D)$ iff $|e| \geq 2$ and there is a vertex $v \in V$, such that $e = N_D(v) = \{w \in V | (w, v) \in A\}$. We give characterizations of $CH(D)$ in case of hamiltonian digraphs $D$ and, more general, of digraphs $D$ having a $\tau$-cycle factor. The results are closely related to the corresponding investigations for competition graphs in K.F.Fraughnaugh et al., Competition graphs of strongly connected and hamiltonian digraphs; SIAM J. Discr. Math. 8 (1995), 179-185 and D.R. Guichard, Competition graphs of hamiltonian digraphs; SIAM J. Discr. Math. 11 (1998), 128–134.