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Cycle pancyclism in digraphs

The subject of pancyclism in digraphs has been studied by several authors mainly in tournaments and nearly tournaments. A digraph is vertex-pancyclism if given a vertex v there are cycles of every length containing v . Similarly, a digraph is arc-pancyclic if given any arc e there are cycles of every length containing e .

In this talk we deal with the concept of cycle-pancyclism to study questions as the following. Given a cycle C , what is the maximum number of arcs which a cycle of length k contained in D has in common with C ?

Assuming that γ is a hamiltonian cycle of the digraph D ; and C_k a directed cycle of length k , we denote $\mathcal{I}_\gamma(C_k) = |A(\gamma) \cap A(C_k)|$. We determine $f(n, k, D) = \max\{\mathcal{I}_\gamma(C_k) \mid C_k \subseteq D\}$, in case that D is a tournament a bipartite tournament or a multipartite tournament.

This is joint work with S. Rajsbaum.