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Mutually orthogonal cycle systems

A k-cycle system of order n is a set of k-cycles whose edges partition the edge set of K_n. We say that two cycle systems $\mathcal{C}$ and $\mathcal{C}'$ are *orthogonal* if every cycle in $\mathcal{C}$ shares at most one edge with each cycle in $\mathcal{C}'$. Orthogonal cycle systems arise naturally from simple Heffter arrays and biembeddings of cycle decompositions.

A collection of cycle systems is *mutually orthogonal* if any two of the systems are orthogonal. In this talk, we give bounds on the number of mutually orthogonal k-cycle systems of order n and provide constructions for sets of mutually orthogonal cyclic cycle systems.

This is joint work with Nicholas Cavenagh and David Pike.