Mutually orthogonal cycle systems

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An ℓ-cycle system of order n is a set of ℓ-cycles whose edges partition the edge set of K_n. We say that two cycle systems, say $\mathcal{C}$ and $\mathcal{C}'$, are *orthogonal* if any cycle of $\mathcal{C}$ and any cycle of $\mathcal{C}'$ share at most one edge. 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 ℓ-cycle systems of order n, and provide constructions for sets of mutually orthogonal cyclic cycle systems.