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On the Hamilton-Waterloo problem for a class of Cayley graphs

The Hamilton-Waterloo problem $HWP(\Gamma; m, n; \alpha, \beta)$ asks for a factorization of the simple graph Γ into α C_m-factors and β C_n-factors. The classic version of the problem, that is, the case in which Γ is the complete graph is still open, although it has been the subject of an extensive research activity.

In this talk, I will consider the Cayley graph $C_m[n] = Cay(\mathbb{Z}_m \times \mathbb{Z}_n, S)$ with connection set $S = \{1, -1\} \times \mathbb{Z}_n$ and present an almost complete solution to $HWP(C_m[n]; m, n; \alpha, \beta)$ with m and n odd. Peter Danziger will show how this result can be used to make progress on the classic problem.

This is joint work with Andrea Burgess and Peter Danziger.