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Alspach's Conjecture for complete equipartite multigraphs: the amalgamation-detachment approach

In 1981, Alspach conjectured that a complete graph can be decomposed into t cycles of lengths $c_1, c_2, \ldots, c_t$, respectively, whenever the obvious necessary conditions are satisfied. The conjecture has recently been proved by Bryant, Horsley, and Pettersson, and even more recently extended to complete multigraphs by Bryant, Horsley, Maenhaut, and Smith.

In this talk, using the amalgamation-detachment approach, we show that the complete equipartite multigraph $\lambda K_{n\times m}$ can be decomposed into cycles of lengths $c_1m, \ldots, c_km$ whenever there exists a decomposition of λmK_n into cycles of lengths $c_1, \ldots, c_k$.

This is joint work with Amin Bahmanian.