Cycles in hypergraphs.

There are several possibilities to define cycles in hypergraphs. In this talk we survey these different cycle notions in hypergraphs and the results available for them. In particular, we introduce a new cycle definition, the $t$-tight Berge-cycle. We formulate the following conjecture about the existence of monochromatic Hamiltonian $t$-tight Berge-cycles. For any fixed $2 \leq c, t \leq r$ satisfying $c + t \leq r + 1$ and sufficiently large $n$, if we color the edges of the complete $r$-uniform hypergraph on $n$ vertices, $K_n^{(r)}$, with $c$ colors, then there is a monochromatic Hamiltonian $t$-tight Berge-cycle. We present some partial results in the direction of this conjecture.

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