

Dirac Type Theorem for Loose Hamilton Cycles in Uniform Hypergraphs

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Dirac's Theorem guarantees the existence of a Hamiltonian cycles in a graph provided its minimum degree is at least $n/2$.

As a generalisation, we say a cycle in a k -uniform hypergraph is ℓ -Hamiltonian if it covers all vertices and every two consecutive edges intersect in exactly ℓ vertices. In this talk we prove a Dirac type theorem for the existence of loose Hamiltonian cycles, i.e. ℓ -Hamiltonian cycles with $\ell < k/2$. More precisely, we show that for all $\ell < k/2$ and all $\gamma > 0$ there is an n_0 such that for all $n > n_0$ the following holds: Every k -uniform n -vertex hypergraph H with minimum $(k-1)$ -degree at least $\left(\frac{1}{2(k-\ell)} + \gamma\right)$ contains an ℓ -Hamiltonian cycle. This result is best possible up to the error term γ .