# Extremal problems for hypergraphs
## (Org: **Frederik Garbe** (Masaryk University))

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**STEFAN GLOCK**, ETH Zürich
*The intersection spectrum of 3-chromatic intersecting hypergraphs*

The intersection spectrum of a hypergraph is the set of all intersection sizes of pairs of edges. In their seminal paper from 1973 which introduced the local lemma, Erdős and Lovász asked: how large must the intersection spectrum of a $k$-uniform 3-chromatic intersecting hypergraph be? They showed that such a hypergraph must have at least three intersection sizes, and conjectured that the size of the intersection spectrum tends to infinity with $k$. We prove this conjecture in a strong form, by showing that there are at least $k^{1/2-o(1)}$ intersection sizes. Joint work with Matija Bucić and Benny Sudakov

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**TOM KELLY**, University of Birmingham
*A proof of the Erdős–Faber–Lovász conjecture*

The Erdős-Faber-Lovász conjecture (posed in 1972) states that the chromatic index of any linear hypergraph on n vertices is at most n. We prove this conjecture for sufficiently large n. Joint work with Dong Yeap Kang, Daniela Kühn, Abhishek Methuku, and Deryk Osthus.

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**ANDER LAMAISON**, Masaryk University
*Hypergraphs with minimum uniform Turán density*

Reiher, Rödl and Schacht showed that the uniform Turán density of every 3-uniform hypergraph is either $0$ or at least $1/27$, and asked whether there exist 3-uniform hypergraphs with uniform Turán density equal or arbitrarily close to $1/27$. We construct 3-uniform hypergraphs with uniform Turán density equal to $1/27$. Joint work with Frederik Garbe and Dan Král.

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**RICHARD LANG**, Heidelberg University
*Minimum degree conditions for tight Hamilton cycles*

We study the existence of tight Hamilton cycles in $k$-uniform hypergraphs under minimum $d$-degree conditions. The case of $k = 2$ and $d = k - 1$ corresponds to Dirac's classic theorem. A well-known result of Rödl, Ruciński and Szemerédi extends this to all $k \geq 3$. Here, we develop a general framework to approach this problem and use it to resolve the case of $d = k - 2$ and $k \geq 3$.

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**NICOLÁS SANHUEZA-MATAMALA**, Czech Academy of Sciences
*Spanning bounded-degree tight $k$-trees*

A $k$-graph is a tight $k$-tree if its edges can be ordered such that the following holds for all edges $e$ except the first: $e$ has a vertex $v$ which is not in any previous edge, and $e \setminus \{v\}$ is contained in some previous edge. We determine asymptotically-optimal codegree conditions which ensure the containment of all spanning bounded-degree tight $k$-trees. This generalises a well-known result of Komlós, Sárközy and Szemerédi. Joint work with Matías Pavez-Signé and Maya Stein.