

AGCO Seminar.

Speakers: Bernardo Subercaseaux, CMU.

Title: Optimal d-Clique Decompositions for Hypergraphs.

Abstract:

We determine the optimal constant for the Erdős-Pyber theorem on hypergraphs. Namely, we prove that every n -vertex d -uniform hypergraph H can be written as the union of a family F of complete d -partite hypergraphs such that every vertex of H belongs to at most $\binom{n}{d}/(n \lg n)$ graphs in F . This improves on results of Csirmaz, Ligeti, and Tardos (2014), and answers an old question of Chung, Erdős, and Spencer (1983). Our proofs yield several algorithmic consequences, such as an $O(n \lg n)$ algorithm to find large balanced bicliques near the Kővári-Sós-Turán threshold. Moreover, we show that biclique partitions provide a combinatorial representation for graphs that is information-theoretically optimal for each density. This representation allows for speed-ups on several graph queries, and a subquadratic approximation algorithm for the densest subgraph problem.

When: Nov 5, 3:00 pm - 4:00 pm.

Where: Sala 5, Edif. Rolando Chuaqui, Facultad de Matemáticas, Campus San Joaquín, UC.

