(SFB) Combinatorics Afternoon Workshop
TU Graz, 6 June 2025

The (SFB) Combinatorics Afternoon will take place on 6 June 2025 (Friday) in the afternoon at the **seminar room STEG050 (AE06)** on the ground floor (EG) of the Mathematics Building located at Steyrergasse 30, 8010 Graz.

Program

13:00-13:50	**Michael Krivelevich**	*Percolation through isoperimetry*
14:00-14:30	Coffee break	
14:30-15:20	**Sahar Diskin**	*TBA*
15:30-16:20	**Michael Anastos**	*TBA*
16:30-17:00	Discussions	
18:00	Joint Dinner	

Title and Abstract

Michael Krivelevich, Tel Aviv University

Title: Percolation through isoperimetry

Abstract:

Let G be a d-regular graph of growing degree on n vertices, and form a random subgraph G_p of G by retaining each edge of G independently with probability $p = p(d)$. Which conditions on G suffice to observe a phase transition at $p = 1/d$ similar to that in the binomial random graph $G(d+1, p)$, or, say, in a random subgraph of the binary hypercube Q^d?

We argue that in the supercritical regime $p = (1+\epsilon)/d, \epsilon > 0$ being a small constant, postulating that every vertex subset S of G of at most $n/2$ vertices has its edge boundary at least $C|S|$, for some large enough constant $C = C(\epsilon) > 0$, suffices to guarantee the likely appearance of the giant component in G_p. Moreover, its asymptotic order is equal to that in the random graph $G(n, (1+\epsilon)/n)$, and all other components are typically much smaller.

We further give examples demonstrating the tightness of this result in several key senses.

A joint work with Sahar Diskin, Joshua Erde and Mihyun Kang.

Sahar Diskin, Tel Aviv University

Title: TBA

Abstract:

Michael Anastos, IST Austria

Title: TBA

Abstract:

Acknowledgement

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