



Seminar/Talk

Cutsets, percolation and random walks

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Host: Laszlo Erdős, Jan Maas

Which graphs G admit a percolating phase (i.e. $p_c(G) < 1$)? This seemingly simple question is one of the most fundamental ones in percolation theory. A famous argument of Peierls implies that if the number of minimal cutsets of size n from a vertex to infinity in the graph grows at most exponentially in n , then $p_c(G) < 1$. Our first theorem establishes the converse of this statement. This implies, for instance, that if a (uniformly) percolating phase exists, then a "strongly percolating one also does. In a second theorem, we show that if the simple random walk on the graph is uniformly transient, then the number of minimal cutsets is bounded exponentially (and in particular $p_c < 1$). Both proofs rely on a probabilistic method that uses a random set to generate a random minimal cutset whose probability of taking any given value is lower bounded exponentially on its size. Joint work with Philip Easo and Vincent Tassion.

Monday, May 26, 2025 05:15pm - 06:15pm

Central Bldg / O1 / Mondi 2a (I01.O1.008)



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