Institut für Diskrete Mathematik

Combinatorics Seminar

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AE06, Steyrergasse 30

Belief propagation for matchings, the subcritical regime and beyond

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Belief propagation for matching problems on random graphs has historically been fruitful starting with the works of Aldous confirming replica symmetric predictions of the random assignment problem. In this talk, we delve into the sparse regime of random graphs, and explore the application of belief propagation methods to maximum weighted matchings. To tackle maximum cardinality matchings, we also introduce a generalization to matchings of maximum weight among those of maximum size. We will exhibit a regime, depending only on the degree distribution of the graph, that we call subcritical in which strong decorrelation between the state of the edges occurs, and another where the question remains open.

Based on joint works with Nathanaël Enriquez, Laurent Ménard and Vianney Perchet.

Fabian Burghart, Mihyun Kang, Ronen Wdowinski