

# Concentration inequalities for finding rainbow matchings

Andrey Kupavskii (Institute for Advanced Study)

Consider a  $k$ -partite  $k$ -uniform hypergraph on  $[n]^k$ . It is not difficult to see that any such hypergraph with more than  $(s-1)n^{k-1}$  edges contains a matching of size  $s$ . Aharoni and Berger asked a "transversal" variant of this question: given  $s$  hypergraphs, each having more than  $(s-1)n^{k-1}$  edges, can we guarantee the existence of an  $s$ -matching with the  $i$ -th edge coming from the  $i$ -th hypergraph? In this talk, I will present our progress on this problem using a certain concentration inequality for the intersection of a family with a random matching. Joint work with Sergei Kiselev.