

# An approximate version of Sidorenko's conjecture

*Date* Tuesday, November 23

*Time* 4 pm

*Location* 303 Mudd

*Abstract:* A beautiful conjecture of Erdos-Simonovits and Sidorenko states that if  $H$  is a bipartite graph, then the random graph with edge density  $p$  has in expectation asymptotically the minimum number of copies of  $H$  over all graphs of the same order and edge density. This conjecture also has an equivalent analytic form and has connections to a broad range of topics, such as matrix theory, Markov chains, graph limits, and quasirandomness. Here we prove the conjecture if  $H$  has a vertex complete to the other part, and deduce an approximate version of the conjecture for all  $H$ . Furthermore, for a large class of bipartite graphs, we prove a stronger stability result which answers a question of Chung, Graham, and Wilson on quasirandomness for these graphs. Joint work with Jacob Fox and Benny Sudakov.