

Logic, parity, and graph decompositions

Date Tuesday, March 6

Time 3:30 pm

Location 317 Mudd

Abstract: Recent work of Kolaitis and Kopparty relates the number of copies of a subgraph in the random graph $G(n, p)$ to questions about logic and circuit complexity. Motivated by this relationship, they show that for certain subgraphs H and values of p , the number of copies of H in $G(n, p)$ is uniformly distributed modulo q for any q . This talk extends their result to broader ranges of both probability p and subgraphs H , and proposes a general method for proving this theorem for all p and H . The proof uses the construction of "uniquely decomposable" graphs, which are interesting in their own right, as well as an analysis of a particular partial ordering on graphs.

Joint work with Bobby DeMarco and Jeff Kahn.