# A probabilistic model
# for the distribution
# of ranks of elliptic curves

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Monday, September 19 at 4:15 pm
111 Cummington Mall, MCS B21
Tea and cookies in MCS 144 at 4:00 pm

**Abstract:** In this talk, we will discuss the possible structures of the Mordell-Weil group of rational points on an elliptic curve as we vary the (naive) height of the curve. The torsion subgroups over the rationals are well understood: Mazur's theorem settles what groups are possible, the parameterization of the corresponding modular curves are known, and we know the distribution of elliptic curves by height with a prescribed torsion subgroup. However, the distribution of ranks of elliptic curves is largely unknown. Several conjectures can be found in the literature (e.g., Goldfeld's conjecture on the average rank), and also some heuristic models, but the basic questions about the distribution of the ranks remain unanswered. In this talk we propose a probabilistic model for the distribution of ranks of elliptic curves, and we compare the predictions with previous results, and with the databases of curves over the rationals that we have at our disposal.