1086-AB-684 **Chantal David*** (cdavid@mathstat.concordia.ca) and **Ethan Smith** (ethancsmith@gmail.com). *Groups of elliptic over finite fields and the Cohen-Lenstra Heuristics.*

Let G be an abelian group of rank 2 and order N, let $M_p(G)$ be the number of elliptic curves over the finite field $\mathbb{F}_p$ with group of points isomorphic to G. We study in this talk the average of $M_p(G)$ over the prime fields $\mathbb{F}_p$, in particular how the average varies with the structure of the group G. We find that this variation is governed by the Cohen-Lenstra Heuristics, which predict that random abelian groups occur with probability weighted by $\#G/\#\mathrm{Aut}(G)$ where $\mathrm{Aut}(G)$ is the number of elements of the automorphism group of G. This variation can also be seen when we forget the group structure, and look at the average number of curves with a fixed number of points over $\mathbb{F}_p$.

This is joint work with E. Smith.

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