

Front Range Algebra, Geometry and Number Theory Seminar

# Statistics of $p$ -divisible groups over $F_p$

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What is the probability that a random  $p$ -divisible group over  $F_p$  is ordinary? Using Dieudonné modules, we will answer this question, and explain how our method can be used to answer similar statistical questions about  $p$ -rank and  $a$ -number. The answers are surprising, and deviate from what one might expect via naive reasoning.

Using these computations and numerical evidence, we formulate several “Cohen-Lenstra” heuristics for the structure of the  $p$ -torsion on the Jacobian of a random hyperelliptic curve over  $F_p$ . These heuristics are the “ $l=p$ ” analogue of Cohen-Lenstra in the function field setting.

This is joint work with David Brown and Jordan Ellenberg.

Thursday April 28th 2011

3:00-5:00 p.m.

WEBER 201