# CORR 99-51

## The Probability that the Number of Points on an Elliptic Curve over a Finite Field is Prime

**Steven Galbraith & James McKee***

**Abstract**    The paper gives a formula for the probability that a randomly chosen elliptic curve over a finite field has a prime number of points. Two heuristic arguments in support of the formula are given as well as experimental evidence.

The paper also gives a formula for the probability that a randomly chose elliptic curve over a finite field has $kq$ points where $k$ is a small number and where $q$ is a prime.