

# Mathematics Student Colloquium

**Timothy Foo**

**Density Results**

**Related to**

**Finite Fields**

*Abstract: Curves and polynomial roots over the finite field  $\mathbb{Z}/p\mathbb{Z}$  naturally give subsets of  $(\mathbb{Z}/p\mathbb{Z})^n$ . By using a natural way of embedding  $(\mathbb{Z}/p\mathbb{Z})^n$  into the  $n$ -dimensional unit hypercube, we obtain from our curve or polynomial a finite subset of the hypercube. When we fix the polynomial or curve, and let  $p \rightarrow \infty$ , we get an infinite countable subset, and questions of density naturally arise. I will talk about known results and the possibility of using primarily elementary methods. In the 1-dimensional case, I will elaborate on how this is related to the conjecture that an irreducible polynomial with integer coefficients, divided by the gcd of all its values, takes on infinitely many prime values.*

**Wednesday, March 21**

**4-5pm**

**204 Smith Hall**