Abstract

René Descartes’ most significant contribution to mathematics was perhaps his idea of associating numerical coordinates to points in the plane, or in space. That association turns the study of geometric figures into the study of the collections of polynomial equations that define the figures; a circle centered at the origin is replaced by the equation $x^2 + y^2 = r^2$.

For Descartes, the constant $r$ in the equation for the circle would be a real number. But there’s no reason we shouldn’t consider equations with other kinds of “numbers” as coefficients. In fact, important examples in number theory are provided by equations whose coefficients are elements of finite fields.

I will give an introduction to some of the mathematics behind curves over finite fields by focussing on “pointless curves” over finite fields: curves over a finite field defined by equations that have no solutions over that finite field.

Thursday July 2 at 1:30 pm

Millikan 208, Pomona College

After the talk, meet Prof. Howe, Harry’s Room (ML 209)