Algebra
Seminar

Questions on Serre's open image theorem

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Abstract: Elliptic curves (smooth curves of genus 1 with a fixed point) are fundamental objects in number theory and one fruitful way to study them is through their Galois representations. These representations arise by considering the natural Galois action on the torsion points of the curve. For a non-CM elliptic curve defined over a number field, a famous theorem of Serre says that the Galois action on the torsion points is "almost as large as possible". After some review and motivation, we will state a precise version of Serre's theorem. This will lead us to a series of natural questions; for example, how large/small can this action be, and what are the possible actions? We will explain some recent results that give partial answers and, time permitting, give some speculation on what one might hope to be true.

Thursday, December 2, 2010, 3:00 pm
Mathematics and Science Center: E408

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