abstract

JOINT IAS/PU NUMBER THEORY SEMINAR
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

In 1969 Artin and Mazur defined the etale homotopy type Et(X) of scheme X, as a way to homotopically realize the etale topos of a X. In the talk I shall present for a map of schemes X --> S a relative version of this notion. We denoted this construction by Et(X/S) and call it the homotopy type of X over S. It turns out that the relative Homotopy type, can be especially useful in studying the sections of the map X --> S. In the special case where S = Spec K is the spectrum of a field, the set of sections are just the set of rational points X(K) and then the relative homotopy type Et(X/Spec K) can be used to define obstructions to the existence of a rational point on X. When K in a number fields it turns out that most known obstructions for the existence of rational points (such as Grothendieck's section obstruction, the regular and etale Brauer-Manin obstructions, etc. . .) can be obtained in this way and this point a view can be used to show new properties of these obstructions. In the case where K is a general field or ring this method allows one to get new obstructions that generalized the obstructions above. This is a joint work in progress with Y. Harpaz. Many of the results appear in our joint paper http://arxiv.org/abs/1002.1423