NUMBER THEORY SEMINAR
Monday, Nov. 17, 4.30 - 5.30 pm, MS 6221

Mladen Dimitrov

TITLE: Galois representations modulo p and cohomology of Hilbert modular varieties

ABSTRACT: The aim of this talk is to extend some arithmetic results on elliptic modular forms to the case of Hilbert modular forms. Among these results let's mention :

(i) the control of the image of the Galois representation modulo p,

(ii) Hida's congruence criterion outside an explicite set of primes p,

(iii) the freeness of the integral cohomology of the Hilbert modular variety over certain local components of the Hecke algebra and the Gorenstein property of these local algebras.

We study the arithmetic of the Hilbert modular forms by studying their mod p Galois representations and our main tool is the action of the inertia groups at p. In order to control this action, we compute the Hodge-Tate (resp. Fontaine-Laffaille) weights of the p-adic (resp.p) etale cohomology of the Hilbert modular variety. The cohomological part of our paper is inspired by the work of Mokrane, Polo and Tilouine on the cohomology of Siegel modular varieties and is built on the geometric constructions in a joint work with Tilouine.