

NUMBER THEORY SEMINAR  
Monday, Nov. 10, 4.30 - 5.30 pm, MS 6221

Edray Goins, Caltech

TITLE: On the Modularity of Wildly Ramified Galois Representations

ABSTRACT: There has been great interest in two-dimensional representations of Galois groups, from conjectures of Artin concerning complex projective representations of the symmetries of the Platonic solids, to conjectures of Shimura and Taniyama concerning  $\ell$ -adic representations associated to elliptic curves. Many of these conjectures were recently answered in the affirmative by Wiles and Taylor using techniques from arithmetic algebraic geometry.

In this talk, we explain how these results can be extended even further by presenting new criteria for certain Galois representations to be modular. In the process, we discuss some basic notions of deformations of ordinary Galois representations, give an overview of the Galois cohomology involved, and review Hida's theory of  $\Lambda$ -adic modular forms.