

# 2012-2013 Distinguished Lecture Series

## UCLA Department of Mathematics

# Jean-Pierre Wintenberger

## University of Strasbourg

### Lecture 1: **On Serre's modularity conjecture**

**Abstract:** Let  $G_Q$  be the absolute Galois group of the field of rational numbers. Serre conjectured that an irreducible odd representation of  $G_Q$  with values in  $GL_2(F)$ ,  $F$  a finite field, arises from a modular form. We will state the conjecture, describe some of its consequences and, if time allows, show how the conjecture fits in a general framework.

### Lecture 2: **About the proof of Serre's modularity conjecture**

**Abstract:** We will give some hints on the proofs of Serre's modularity conjecture (jw C. Khare).

### Lecture 3: **Ramification in Iwasawa theory**

**Abstract:** Let  $F$  be a totally real number field and let  $p$  be a prime number. Let  $L$  be the cyclotomic field generated over  $F$  by roots of unity of order a power of  $p$ . Following Wiles proof of Iwasawa main conjecture, we construct a  $Z$  extension of  $Z_p$  whose ramification at an auxiliary prime is equivalent to Leopoldt conjecture (jw C. Khare).



Jean-Pierre Wintenberger  
University of Strasbourg

Lecture 1  
**Tuesday, April 9, 2013**  
3:00 - 3:50 pm  
MS 6627

Lecture 2  
**Wednesday, April 10, 2013**  
3:00 - 3:50 pm  
MS 6627

Lecture 3  
**Thursday, April 11, 2013**  
3:00 - 3:50 pm  
MS 6627