Speaker: Federico Scavia

Title: The lifting problem for Galois representations

Abstract: For every finite group H and every finite H-module A, we determine the subgroup of negligible classes in $H^2(H, A)$, in the sense of Serre, over fields with enough roots of unity. As a consequence, we show that for every odd prime p and every field F containing a primitive p-th root of unity, there exists a continuous 3-dimensional mod p representation of the absolute Galois group of $F(x_1, ..., x_p)$ which does not lift modulo p^2. We also construct continuous 5-dimensional Galois representations mod 2 which do not lift modulo 4. This answers a question of Khare and Serre, and disproves a conjecture of Florence. Joint work with Alexander Merkurjev.