Séminaire de théorie des nombres

Le 12 février 2024 à 14h (Jussieu)

Split Kolyvagin Systems for Conjugate-dual Galois Representations and Applications to the Bloch–Kato Conjectures (in memory of Jan Nekovar)

Exposé de Dimitar Jetchev
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Résumé : We develop the formalism of Euler and Kolyvagin systems at split auxiliary primes that is used to study Selmer groups of Galois representations of the absolute Galois group of an imaginary quadratic field that are conjugate self-dual but that do not necessarily extend to the absolute Galois group of the rationals. Under the existence and non-triviality of such split Kolyvagin systems, we prove the Bloch–Kato conjecture in low analytic ranks (zero or one) as well as bounds on the Tate–Shafarevich group and one divisiblity in the Iwasawa main conjecture. We show multiple applications that were previously not accessible with the classical anticyclotomic Kolyvagin systems at inert primes, mainly, Selmer groups for adjoint representations and for modular forms twisted by anticyclotomic Hecke characters due to Alonso–Castella–Rodriguez and Castella–Tuan-Do, respectively, as well as recent constructions for cohomological Galois representations for unitary and orthogonal Shimura varieties due to Cornut, Jetchev, Boumasmoud, Graham–Shah and Zhao. This is joint work with Nekovar and Skinner devoted to the memory of Jan Nekovar.