11.4.2018 Kazim Buyukbodak, Koc University.
Title: “p-adic Gross-Zagier formula at critical slope and a conjecture of Perrin-Riou”
Abstract: I will report joint work in progress with R. Pollack and S. Sasaki, where we prove a critical slope p-adic Gross-Zagier formula for critical slope p-adic L-functions. Besides the strategy for our proof, I will illustrate a number of applications. The first of these is the proof of a conjecture of Perrin-Riou (that predicts an explicit relation between Beilinson-Kato elements and Heegner points). The second is towards a Birch and Swinnerton-Dyer formula when the analytic rank is one (yielding a simplified proof of the recent results of Jetchev-Skinner-Wan in this context).

Title: “Exponential motives”
Abstract: (Joint work with Peter Jossen). What motives are to algebraic varieties, exponential motives are to pairs consisting of an algebraic variety \(X\) over some field \(k\) and a regular function \(f\) on \(X\). In characteristic zero, one is naturally led to define the de Rham and rapid decay cohomology of such pairs when dealing with numbers like the special values of the gamma function or the Euler-Mascheroni constant which are not expected to be periods in the usual sense. Over finite fields, the etale and rigid cohomology groups of these pairs play a pivotal role in the study of exponential sums. Following ideas of Katz, Kontsevich, and Nori, we construct a Tannakian category of exponential motives when \(k\) is a subfield of the complex numbers. This allows one to attach to exponential periods a Galois group that conjecturally governs all algebraic relations among them. The category is equipped with a Hodge realisation functor with values in mixed Hodge modules over the affine line and, if \(k\) is a number field, with an etale realisation related to exponential sums.

25.4.2018 Paul Truman, Keele University.

2.5.2018 Andreas Rosenschon, LMU.

9.5.2018 Masato Kurihara, Keio University.

23.5.2018 Sudhanshu Shekar, Indian Institute of Technology, Kanpur.
Title: “Non-commutative Twisted Euler characteristic in Iwasawa theory”
Abstract: It is well known that for a finitely generated torsion module \(M\) over the Iwasawa algebra \(\mathbb{Z}_p[[\Gamma]] \cong \mathbb{Z}_p[[X]]\), there exists a twist \(M \otimes_{\mathbb{Z}_p} \rho\) of \(M\) by a continuous \(p\)-adic character \(\rho\) of \(\Gamma\) such that the \(U\)-Euler characteristic is finite for every open subgroup \(U\) of \(\Gamma\). We prove a generalization of this result by considering modules over the Iwasawa algebra of a general \(p\)-adic Lie group \(G\), instead of \(\Gamma\). This is a joint work with Somnath Jha.