Speaker: Yiwen Ding

Title: L-invariants and p-adic Langlands program

Abstract: Let V be a semi-stable non-crystalline p-adic Galois representation. By p-adic Hodge theory, one can associate to V the so-called Fontaine-Mazur L-invariants, which are invisible in the classical local Langlands correspondence. A task in p-adic Langlands program is to understand their counterpart on the automorphic side. In this talk, we will first review some of Breuils initial work on p-adic Langlands program and L-invariants in GL2(Qp)-case, and then report some recent progress (joint with Breuil) on higher L-invariants.

Speaker: Zongbin Chen

Title: Introduction to Langlands correspondence for function fields

Abstract: As an introduction to Langlands correspondence, I will try to explain Drinfelds work on this conjecture for the group GL(2), and the later developments following his idea.

Speaker: Ruochuan Liu

Title: Introduction to perfectoid spaces

Abstract: We will survey the theory of perfectoid spaces and its various applications.

Speaker: Xinyi Yuan

Title: Weak Lefschetz theorems for Brauer groups

Abstract: In this talk, we introduce some Lefschetz-type theorems for Brauer groups of hyperplane sections of smooth projective varieties. This is more or less known when the dimension of the hyperplane section is at least 3, but we will also introduce a version which lowers the dimension from 3 to 2. As a consequence, we reduce the Tate conjecture for divisors on smooth projective varieties from general dimensions to dimension 2, and thus proves a results of Morrow by a different method.

Speaker: Yongqua Hu

Title: The structure of 2-dimensional Galois deformation rings

Abstract: In this talk, I will review the general Galois deformation theory first studied by Mazur in 90's, with a focus on the case of two-dimensional reducible Galois representations. I will explain different deformation conditions which lead to quotients of the universal deformation ring. The main result expresses the tangent space of the universal deformation ring in terms of that of certain quotients. This is joint work with Haoran Wang.

Speaker: Li Cai

Title: The Gross-Zagier Formula over Shimura Curves via the Relative Trace Formula Approach

Abstract: The celebrated Gross-Zagier formula, under classical Heegner hypothesis, was established by Gross and Zagier. The general Gross-Zagier formula over Shimura curves was finally completed by Yuan, S. Zhang and W. Zhang via the arithmetic Siegel-Weil. On the other hand, W. Zhang has formulated a relative trace formula approach to the arithmetic Gan-Gross-Prasad conjecture. In this talk, we shall discuss a proof of Yuan-Zhang-Zhang's theorem via the relative trace formula approach under W. Zhang's framework. In particular, we shall talk about arithmetic smooth matching at archimedean places. This is a joint work with Y. Tian.