

SCNTD – UCSD; MAY 23, 2015.

• **Bjorn Poonen, MIT**

Title: Heuristics for boundedness of ranks of elliptic curves

Abstract: We present heuristics that suggest that there is a uniform upper bound on the rank of $E(\mathbb{Q})$ as E varies over all elliptic curves over \mathbb{Q} . This is joint work with Jennifer Park, John Voight, and Melanie Matchett Wood.

• **Peter Scholze, Bonn U.**

Title: p -adic Hodge theory

Abstract: I will try to give an impression of the historical development of p -adic Hodge theory, closely following a remark in Tate’s 1967 “ p -divisible groups” paper: “One can ask whether a similar Hodge-like decomposition exists for the étale cohomology with values in \mathbb{C} in all dimensions, for a scheme $X_{\mathbb{C}}$ coming from a scheme X projective and smooth over \mathbb{R} , or perhaps even over K , or for suitable “rigid analytic” spaces.”

• **Wei Zhang, Columbia U.**

Title: Taylor expansion of L-functions over a function field, part I.

Abstract: This is a report of a work in progress to prove a formula of an arbitrary order derivative of an automorphic L -function for GL_2 over a function field, in terms of an intersection number of a “Heegner-type” cycle on a moduli space of Drinfel’d Shtukas. This can be viewed as an extension (in the function field case) of the Waldspurger formula (the zeroth order “derivative”) and the Gross–Zagier formula (the first order derivative).

• **Zhiwei Yun, Stanford U.**

Title: Taylor expansion of L-functions over a function field, part II.

Abstract: This is a report of a work in progress to prove a formula of an arbitrary order derivative of an automorphic L -function for GL_2 over a function field, in terms of an intersection number of a “Heegner-type” cycle on a moduli space of Drinfel’d Shtukas. This can be viewed as an extension (in the function field case) of the Waldspurger formula (the zeroth order “derivative”) and the Gross–Zagier formula (the first order derivative).