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Abstracts

ICM Section 3 (Number Theory)

July 2022

1 Raphael Beuzart-Plessis

Aix-Marseille University, France

Relative trace formulae and the Gan-Gross-Prasad conjectures

Abstract

In this talk, I will report on some recent progress that have been made on the so-called Gan-Gross-Prasad conjectures through the use of relative trace formulae. In their global aspects, these conjectures, as well as certain refinements first proposed by Ichino-Ikeda, give precise relations between the central values of some higher-rank L-functions and automorphic periods. There are also local counterparts describing branching laws between representations of classical groups. In both cases, approaches through relative trace formulae have shown to be very successful and have even lead to complete proofs, at least in the case of unitary groups. However, the works leading to these definite results have also been the occasion to develop further and gain new insights on these fundamental tools of the still emerging relative Langlands program.

2 Atsushi Ichino

Kyoto University, Japan
Theta lifting and Langlands functoriality

Abstract

We review various aspects of theta lifting and its role in studying Langlands functoriality. In particular, we discuss realizations of the Jacquet-Langlands correspondence and the Shimura-Waldspurger correspondence in terms of theta lifting and their arithmetic applications.

3 Tasho Kaletha

University of Michigan, USA
Representations of reductive groups over local fields

Abstract

We discuss progress towards the classification of irreducible admissible representations of reductive groups over non-archimedean local fields and the local Langlands correspondence.

4 Sug Woo Shin

The University of California, Berkeley, USA
Points of Shimura varieties modulo primes

Abstract

After reviewing the problem of computing the zeta function and ell-adic cohomology of Shimura varieties in the context of the Langlands program, I will report on joint work with Mark Kisin and Yihang Zhu to establish a stabilized trace formula computing the cohomology of abelian-type Shimura varieties at primes of good reduction, building upon earlier work by Kisin.