RUTGERS
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Mathematics Colloquium

Cocenter and representations of p-adic groups

Xuhua He (University of Maryland / IAS)

Abstract

It is known that the number of conjugacy classes of a finite group equals the number of irreducible representations (over complex numbers). The conjugacy classes of a finite group give a natural basis of the cocenter of its group algebra. Thus the above equality can be reformulated as a duality between the cocenter (i.e. the group algebra modulo its commutator) and the finite dimensional representations.

Now let us move from the finite groups to the p-adic groups. In this case, one needs to replace the group algebra by the Hecke algebra. The problem is that the conjugacy classes are "mixed" together, which makes the cocenter (as well as representations) of p-adic groups more difficult to understand. The question is "can you hear every note from a musical chord?" Or in our situation, "can you separate the cocenter into nice subspaces?"

In this talk, I will discuss a new discovery on the structure of the cocenter and then some applications to the complex and modular representations of p-adic groups, including: a generalization of Howe's conjecture on twisted invariant distributions, trace Paley-Wiener theorem for smooth admissible representations, and the abstract Selberg Principle for projective representations.

Wednesday, 8 March 2017, 4pm

Smith Hall 204

Tea and refreshments will be served at 3:45pm.