INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

Number Theory Seminar

Date: September 05, 2024
Time: 02:30 PM

VENUE:

L- infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Isolation of the Cuspidal Spectrum (Part-2)

SPEAKER:

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ABSTRACT:

Let Q be the rationals. Let \A_\Q denote the adeles over \Q. Let $G_n = GL_n$ and consider the space G = G(Q) \slash G(\mathbb{A}_\Q) /backslash K$ where K is the standard maximal compact of GL_n(\A_\Q). The space of automorphic cusp forms is a subspace L^2_cusp(G) of L^2(G). We know that L^2 admits a spectral decomposition consisting of L^2_cusp \bigoplus L^2_res \bigoplus L^2_Eis (the plus over the Eisenstein is in fact a direct integral) following Langlands, Moeglin-Waldspurger and/or Arthur. Let \mathcal{S}(G) denote the space of Schwartz functions on G. Then the right regular representation of G on L^2(G) extends to \mathcal{S}(G) via \pi(f)v(g_0) = \int_G f(g) v(g_0g) dg for v \in L^2(G). Following a paper of Beuzart-Plessis, Liu, Zhang and Zhou, we shall construct Schwartz functions f such that. the image of \pi(f) is purely cuspidal. In fact, we shall construct a multiplier i.e. a continuous map \mu :\mathcal{S}(G) \rightarrow \mathcal{S}(G) s.t. given a finite collection of cuspidal representations \pi_1,...,\pi_m we have that \mu(f)(\pi_i)(v) = \pi_i(f)(v) for all i and v\in \pi_i.

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