

Philadelphia Area Number Theory Seminar

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Beyond the spherical sup-norm problem

Abstract: The sup-norm problem on arithmetic Riemannian manifolds occupies a prominent place at the intersection of harmonic analysis, number theory, and quantum mechanics. It asks about the sup-norm of L^2 -normalized joint eigenfunctions of invariant differential operators and Hecke operators, most classically in terms of their Laplace eigenvalues (as in the QUE problem for high-energy eigenstates), but also in terms of the volume of the manifold and other parameters.

In this talk, we will describe new results, joint with Blomer, Harcos, and Maga, which for the first time solve the sup-norm problem for non-spherical Maaß forms of an increasing *dimension* of the associated K -type, on an arithmetic quotient of $G = \mathrm{SL}(2, \mathbb{C})$, with $K = \mathrm{SU}(2)$. We combine representation theory, spectral analysis, and diophantine arguments, developing new Paley–Wiener theory for G and sharp estimates on spherical trace functions of arbitrary K -type on the way to a novel counting problem of Hecke correspondences close to various special submanifolds of G .

Thursday, October 7, 2021

3:25 – 4:45 PM

Swarthmore College
Department of Mathematics and Statistics
Science Center **149**

Informal refreshments at 3:10PM