Mathematics Department Colloquium

Organizer: Maciej Zworski

Thursdays, 4:10–5:00pm, 60 Evans

April 7 **Elon Lindenstrauss**, Princeton University

Arithmetic Quantum Unique Ergodicity and the Classification of Invariant Measures

The quantum unique ergodicity conjecture of Rudnick and Sarnak states roughly that for a negatively curved compact manifold the eigenfunctions of the Laplacian become more and more uniformly distributed as eigenvalue tends to infinity. Much research has been focused on the special case of arithmetic surfaces.

Surprisingly, for these special surfaces, the quantum unique ergodicity conjecture is intimately related with a seemingly unrelated topic with a long history of its own, the classification of measures on homogeneous spaces invariant under certain subgroups.

The same techniques can also be used to prove a partial result towards Littlewood's conjecture on simultaneous Diophantine approximations (this last result is in a joint paper with M. Einsiedler and A. Katok).