

## **abstract**

ANALYSIS MATH-PHYSICS SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

---

An outstanding problem in "Quantum Chaos" is to understand the complexity of highly excited quantum states, and in particular of eigenfunctions of the Laplacian on a compact manifold. One attribute that can be studied is complexity of the nodal set, which is the locus of points where the eigenfunction vanishes. I will describe some recent results for the case of flat tori, concerning the structure of the nodal sets and  $L^2$ -bounds for the restriction of the eigenfunctions to hypersurfaces. These issues connect with purely arithmetic problems on the representations of integers as sums of squares and the distribution of the corresponding lattice points on arcs of circles and caps on spheres. (Joint work with Jean Bourgain).