

QM²-Colloquium

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Seminar room of the Institute
of Physics II (R201)

Shapes and Sizes of eigenfunctions

Steve Zelditch, Northwestern University

Eigenfunctions of the Schrodinger operator (or a Laplacian on a domain or manifold) represent modes of vibrations of drums and membranes. In quantum mechanics they represent stationary states of atoms. Understanding shapes and sizes of eigenfunctions allows one to visualize these objects. An intriguing problem is to relate the shapes and sizes of eigenfunctions to the underlying classical mechanics, such as the geodesic flow of (M, g) or the dynamics of billiard trajectories on a billiard table.

In this talk we will explain the role of eigenfunctions in quantum mechanics and discuss both classic and new results describing nodal (zero) sets of eigenfunctions. The new results relate nodal sets to classical dynamics. No prior knowledge of quantum mechanics is assumed.

Contact person: George Marinescu