

Diffusion determines the manifold

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The famous question of Kac is whether one can hear the shape of a drum. Or more precisely, whether all eigen frequencies of a drum determine the drum. In general the answer to the latter question is negative. The eigen frequencies are equal if and only if there exists a unitary operator which maps the Laplacian on the first drum onto the Laplacian on the second drum. In this talk we discuss what happens if the unitary operator is replaced by an order isomorphism, i.e., if it maps positive functions to positive functions. Or equivalently, if the diffusion processes on the two drums are equal.

This is joint work with W. Arendt and M. Biegert.