Estimates from below: spectral function, remainder in Weyl's law and resonances

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007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

We obtain asymptotic lower bounds for the spectral function of the Laplacian on compact manifolds. In the negatively curved case, thermodynamic formalism for hyperbolic flows is applied to improve the estimates.

Our results can be considered pointwise versions (on a general manifold) of lower bounds (due to Hardy and Landau) for the error term in the Gauss circle problem. We next discuss lower bounds for the remainder in Weyl?s law on negatively-curved surfaces. Our approach works in variable negative curvature, and is based on wave trace asymptotics for long times, thermodynamic formalism for hyperbolic flows, and small-scale microlocalization.

At the end, we shall discuss how to obtain logarithmic lower bound for the local density of resonances for infinite area, geometrically finite surfaces, and how to improve them to polynomial lower bound for infinite index subgroups of arithmetic groups.

This is joint work with I. Polterovich, J. Toth and F. Naud.

This talk should be accessible to general faculty.