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Weyl's Formula and Kernel Operators

Abstract

Weyl's famous formula determines the asymptotic behaviour of the eigenvalues of the Laplace Operator with Dirichlet or Neumann boundary conditions. It shows in particular that the volume is determined by the eigenvalues. In the talk we will show how the asymptotic behaviour in the spirit of Weyl is related to ultracontractivity and in particular to estimates for kernel operators. These estimates will allow us to develop a perturbation theory for Weyl asymptotics. The results are rewarding: We prove that also the Dirichlet-to-Neumann operator (in the Calderon setting with potential) has a Weyl asymptotics. This operator is defined on the L_2 space of the boundary of a smooth domain, and the main result shows that its eigenvalues determine the surface of the domain. This joint work with Tom ter Elst.

Talk time: 2016-07-18 14:30— 2016-07-18 15:20

Talk location: Cupples I Room 115

Session: Operator theory, singular integral equations, and PDEs. Organized by R. Duduchava, E. Shargorodsky, and J. Lang