

SPECTRAL GEOMETRY OF THE NEUMANN PROBLEM

This talk concerns the Neumann eigenvalue problem for the Laplace operator on bounded domain Ω with Lipschitz boundary $\partial\Omega$. We will begin by introducing the weak formulation and variational characterization of the problem,

$$-\Delta u = \mu u \quad \text{in } \Omega, \quad \frac{\partial u}{\partial n} = 0 \quad \text{on } \partial\Omega,$$

and discuss the spectral properties of the Neumann Laplacian. Next, we will explore domain-monotonicity properties for Neumann eigenvalues. Finally, we will talk about the classical Szegő-Weinberger inequality and some of its recent generalizations.