

Spectral theory for elliptic differential operators and Dirichlet-to-Neumann maps

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We consider a formally symmetric second order elliptic differential expression of the form

$$\mathcal{L}u = - \sum_{j,k=1}^n (\partial_j a_{jk}) \partial_k u + au$$

with variable coefficients on a bounded domain Ω in \mathbb{R}^n and a class of selfadjoint realizations of \mathcal{L} in $L^2(\Omega)$ with certain nonlocal boundary conditions, such that the spectrum of these operators is discrete. The main objective of this talk is to show how the eigenvalues and associated eigenspaces of these operators can be characterized with the help of a Dirichlet-to-Neumann map associated with \mathcal{L} on the boundary of Ω .

The talk is based on a joint work with J. Behrndt.