

Inequalities between the eigenvalues of elliptic operators

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In this talk we discuss inequalities between the Dirichlet and the Neumann eigenvalues of elliptic operators on bounded domains. One question of particular interest concerns the number of Neumann eigenvalues μ_k of a given operator below the first Dirichlet eigenvalue λ_1 : For the Laplacian $-\Delta$, the inequality $\mu_2 < \lambda_1$ holds on any bounded Lipschitz domain in $\mathbb{R}^d$, and in simply connected domains in $\mathbb{R}^2$ this was recently improved to $\mu_3 \leq \lambda_1$. We present a generalization of this inequality to certain elliptic operators with coefficients.