EIGENVALUE INEQUALITIES FOR THE LAPLACIAN WITH MIXED BOUNDARY CONDITIONS

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We will discuss inequalities for the eigenvalues of the Laplacian subject to mixed boundary conditions on polyhedral and more general bounded domains. The eigenvalues subject to a Dirichlet boundary condition on a part of the boundary and a Neumann boundary condition on the remainder of the boundary are estimated in terms of either Dirichlet or Neumann eigenvalues. Our results complement several classical inequalities between Dirichlet and Neumann eigenvalues due to Pólya, Payne, Levine and Weinberger, Friedlander, and others. These results are obtained in collaboration with Jonathan Rohleder.