

# Analysis of Boundary-Domain Integral Equations for Variable-Coefficient BVPs and their Spectral Properties

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Several ways of reducing the Dirichlet and Neumann BVPs for a *variable-coefficient* PDE on three-dimensional interior and exterior domains with compact boundaries to some systems of direct *Boundary-Domain* Integral Equations (BDIEs) are demonstrated and the obtained BDIE systems are analysed in the weighted Sobolev (Beppo Levi type) function spaces. Equivalence of some of the BDIE systems to the original BVPs and the invertibility of the BDIE operators of these systems are proved. The operators of the remaining BDIE systems are perturbed with appropriate finite-dimensional operators making them invertible as well. The spectral properties of the BDIE systems of the second kind are then analysed.