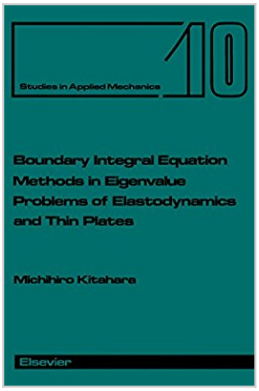

Boundary Integral Equation Methods in Eigenvalue Problems of Elastodynamics and Thin Plates (Studies in Applied Mechanics)

By M. Kitahara

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The boundary integral equation (BIE) method has been used more and more in the last 20 years for solving various engineering problems. It has important advantages over other techniques for numerical treatment of a wide class of boundary value problems and is now regarded as an indispensable tool for potential problems, electromagnetism problems, heat transfer, fluid flow, elastostatics, stress concentration and fracture problems, geomechanical problems, and steady-state and transient electrodynamics.

In this book, the author gives a complete, thorough and detailed survey of the method. It provides the only self-contained description of the method and fills a gap in the literature. No-one seriously interested in eigenvalue problems of elasticity or in the boundary integral equation method can afford not to read this book. Research workers, practising engineers and students will all find much of benefit to them.

Contents: Introduction. Part I. Applications of Boundary Integral Equation Methods to Eigenvalue Problems of Elastodynamics. Fundamentals of BIE Methods for Elastodynamics. Formulation of BIEs for Steady-State Elastodynamics. Formulation of Eigenvalue Problems by the BIEs. Analytical Treatment of Integral Equations for Circular and Annular Domains. Numerical Procedures for Eigenvalue Problems. Numerical Analysis of Eigenvalue Problems in Antiplane Elastodynamics. Numerical Analysis of Eigenvalue Problems in Elastodynamics. Appendix: Dominant mode analysis around caverns in a semi-infinite domain. Part II. Applications of BIE Methods to Eigenvalue Problems of Thin Plates. Fundamentals of BIE Methods for Thin Plates. Formulation of BIEs for Thin Plates and Eigenvalue Problems. Numerical Analysis of Eigenvalue Problems in Plate Problems. Indexes.

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