Acoustic and Elastic Wave Scattering Using Boundary Elements.

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This text first reviews the basic equations for acoustical problems with emphasis on a surface integral representation of the sound field in terms of a Green's function and its approximate representation as a sum over a number of boundary elements. The details of constructing boundary elements are presented and the solution to several generic problems, such as the radiating sphere, are given. The text also covers the basic equations of elastodynamics and their integral representation - followed by numerical examples.

Chapter 3 covers hypersingular boundary element methods with emphasis on the formalism, computational methods, and numerical results. An improved formulation for 3D acoustic radiation problems is treated in chapter 4, and the solution of exterior acoustic problems is emphasized. The formalism is presented and numerical results are given. The final chapter is devoted to a new formulation for 3D elastic wave problems.