

Fourier BEM

Generalization of Boundary Element Methods by Fourier Transform

Like FEM, the Boundary Element Method (BEM) provides a general numerical tool for the solution of complex engineering problems. In the last decades, the range of its applications has remarkably been enlarged. Therefore dynamic and nonlinear problems can be tackled. However they still demand an explicit expression of a fundamental solution, which is only known in simple cases. In this respect, the present book proposes an alternative BEM-formulation based on the Fourier transform, which can be applied to almost all cases relevant in engineering mechanics. The basic principle is presented for the heat equation. Applications are taken from solid mechanics (e.g. poroelasticity, thermoelasticity). Transient and stationary examples are given as well as linear and nonlinear. Completed with a mathematical and mechanical glossary, the book will serve as a comprehensive text book linking applied mathematics to real world engineering problems.

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