

Dual Reciprocity Boundary Face Method for Solving Inhomogeneous Elasticity Problem

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Abstract

The newly developed boundary face method (BFM) is implemented directly based on solid models which are represented by the boundary (B-rep) in most CAD packages. In the BFM, geometric errors are avoided since the integrand quantities are calculated from the boundary faces rather than from elements. Directly use of the BFM for inhomogeneous problems, however, is not suggested due to the similar reason for the traditional boundary element method (BEM). By coupled with the dual reciprocity method (DRM), the BFM is extended for solving inhomogeneous problems without loss of its attractive “boundary only” character. In this coupled method, domain integrals, appeared in the integral equation, are transformed into boundary integrals by using a particular solution of the approximation function. The coupled method is implemented for solving inhomogeneous problems governed by the Navier equation, and a comparison with DRBEM is made to illustrate the advantages of our method.

Keywords: boundary face method, dual reciprocity method, radial basis function, elasticity.

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