

Using analytical expressions in radial integration BEM for variable coefficient elasticity problems

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Abstract: In this paper, a new approach using analytical expressions in the radial integration boundary element method (RIBEM) is presented for solving variable coefficient elasticity problems. This approach can improve the computational efficiency considerably and can overcome the time-consuming deficiency of RIBEM in computing involved radial integrals. The fourth-order spline RBF is employed to approximate unknowns appearing in domain integrals arising from the varying shear modulus. The radial integration method is utilized to convert domain integrals to the boundary resulting in a pure boundary discretization algorithm. Numerical examples are given to demonstrate the efficiency of the presented approach.

Keywords: Boundary element method, Radial integration method, elasticity, Fourth-order spline RBF