

A Modified Decoupled Semi-Analytical Approach Based On SBFEM for Solving 2D Elastodynamic Problems

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Abstract : In this paper, a new trend for improvement in semi-analytical method based on scale boundaries in order to solve the 2D elastodynamic problems is provided. In this regard, only the boundaries of the problem domain discretization are by specific sub-parametric elements. Mapping functions are uses as a class of higher-order Lagrange polynomials, special shape functions, Gauss-Lobatto -Legendre numerical integration, and the integral form of the weighted residual method, the matrix is diagonal coefficients in the equations of elastodynamic issues. Differences between study conducted and prior research in this paper is in geometry production procedure of the interpolation function and integration of the different is selected. Validity and accuracy of the present method are fully demonstrated through two benchmark problems which are successfully modeled using a few numbers of DOFs. The numerical results agree very well with the analytical solutions and the results from other numerical methods.

Keywords : 2D elastodynamic problems, lagrange polynomials, G-L-Lquadrature, decoupled SBFEM

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