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Free Vibration Analysis by Using the MLPG Method with Natural Neighbour Interpolation

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Summary

A novel MLPG method for free vibration analysis is presented in this paper. Local weak forms are developed using weighted residual method locally from the partial differential equation of free vibration. In the present MLPG formulation, natural neighbour interpolation is employed for constructing trial function, while the three-node triangular FEM shape function is used as test function. The shape functions so formulated possess delta function property and the essential boundary conditions can be easily imposed. Numerical examples for free vibration analysis of two-dimensional solids are presented to demonstrate the accuracy and efficiency of the present MLPG method in solving realistic engineering problems.

keywords: Meshless method, MLPG, Natural neighbour interpolation, Free vibration