

Fast multipole method to solve boundary integral equations of 3-D elastic wave scattering problems

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The fast multipole method is developed for the solution of the boundary integral equations arising in 3-D elastic wave scattering problems. When coupled with an iterative solver for linear equations, the fast multipole method can significantly reduce computation and memory requirements. The order of operations for the product of the matrix obtained from the discretization of the integral kernel and a vector is reduced from N^2 to the order of N . According to numerical experiments, the fast multipole method for 3-D elastic wave scattering problems would be expected to become significantly efficient in computation for problems with more than tens of thousands of unknown variables.