

# The pFFT accelerated BEM for 3-D acoustic problems

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## Abstract

The precorrected-FFT acceleration technique is successfully applied in the boundary element method for the simulation of 3-D acoustic problems. The composite Helmholtz integral equation presented by Burton and Miller is employed to overcome the nonuniqueness problem occurring in the simulation of exterior acoustic problems by the boundary element method. Since the triangular constant element is employed, the hypersingular boundary integral equation is reduced into a weakly singular boundary integral equation with the application of a modified Burton and Miller's formulation. The computational cost, the consumed memory and the convergence of the current method are demonstrated and analyzed through the simulation of acoustic radiation and acoustic scattering problems.

**Keywords:** BEM; pFFT; acoustic problems