The h-p version of the boundary element method for transmission problems with piecewise analytic data

Cita: Guo, B., Heuer, N., Stephan, E. (1996). The h-p version of the boundary element method for transmission problems with piecewise analytic data. *SIAM Journal on Numerical Analysis, 33*(2), 789-808. https://doi.org/10.1137/0733040

Abstract

This paper analyzes the rate of convergence of the h-p version of the boundary element Galerkin method for transmission problems with piecewise analytic data. Based on the regularity of solutions of integral equations in terms of countably nonmed spaces, we design the geometric mesh on the interface $\Gamma $ and the boundary element subspace containing piecewise polynomials with varying degrees. We prove that the boundary element Galerkin solution converges exponentially fast to the solution of the integral equation in the $H^{{1/2}} (\Gamma) \times H^{{{ - 1} / 2}} (\Gamma)$-norm.