SPLITTING EXTRAPOLATIONS FOR SOLVING BOUNDARY INTEGRAL EQUATIONS OF LINEAR ELASTICITY DIRICHLET PROBLEMS ON POLYGONS BY MECHANICAL QUADRATURE METHODS

摘要
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SPLITTING EXTRAPOLATIONS FOR SOLVING BOUNDARY INTEGRAL EQUATIONS OF LINEAR ELASTICITY DIRICHLET PROBLEMS ON POLYGONS BY MECHANICAL QUADRATURE METHODS

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Abstract Taking h_m as the mesh width of a curved edge Γ_m $(m=1,\ldots,d$) of polygons and using quadrature rules for weakly singular integrals, this paper presents mechanical quadrature methods for solving BIES of the first kind of plane elasticity Dirichlet problems on curved polygons, which possess high accuracy $O(h_0^3)$ and low computing complexities. Since multivariate asymptotic expansions of approximate errors with power h_i^3 $(i=1,2,\ldots,d)$ are shown, by means of the splitting extrapolations high precision approximations and a posteriori estimate are obtained.

Key words   Splitting extrapolation   Linear elasticity Dirichlet roblem   Boundary integral equation of the first kind   Mechanical quadrature method

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