邊界元素法1998 第十一次作業

1. Solve the interior Laplace problem with exact solution

$$u(r, \theta) = r \, cos(\theta)$$

by using BEPO2D program.

    (a). Boundary element mesh with 36 elements with Dirichelet boundary conditions.

    (b). Test $[\bar{T}]$ and $[M]$ matrices by use of simple solution.

    (c). Test $[U]^{-1}[\bar{T}]$ and $[\bar{L}]^{-1}[M]$ matrices by use of simple solution.

    (d). Test $[U]^{-1}[\bar{T}]$ and $[\bar{L}]^{-1}[M]$ matrices by use of equilibrium condition.

    (e). Plot the potential distribution for $0 < r < 1$.

2. Solve the exterior Laplace problem with exact solution

$$u(r, \theta) = \frac{1}{r} \, cos(\theta)$$

by using BEPO2D program.

    (a). Boundary element mesh with 36 elements with Dirichelet boundary conditions.

    (b). Test $[\bar{T}]$ and $[M]$ matrices by use of simple solution.

    (c). Test $[U]^{-1}[\bar{T}]$ and $[\bar{L}]^{-1}[M]$ matrices by use of simple solution.

    (d). Test $[U]^{-1}[\bar{T}]$ and $[\bar{L}]^{-1}[M]$ matrices by use of equilibrium condition.

    (e). Plot the potential distribution for $1 < r < \infty$.

Method 1: changing the influence coefficients

$$U_{ij} \to U_{ij}$$

$$-\bar{T}_{ij} \to \bar{T}_{ij}, (i \neq j)$$

$$\bar{T}_{ij} \to \bar{T}_{ij}, (i = j)$$

$$-\bar{L}_{ij} \to \bar{L}_{ij}, (i \neq j)$$

$$\bar{L}_{ij} \to \bar{L}_{ij}, (i = j)$$

$$M_{ij} \to M_{ij},$$

Method 2: changing the direction of the boundary element mesh to be clockwise (Comparing normal vectors, influence coefficients)