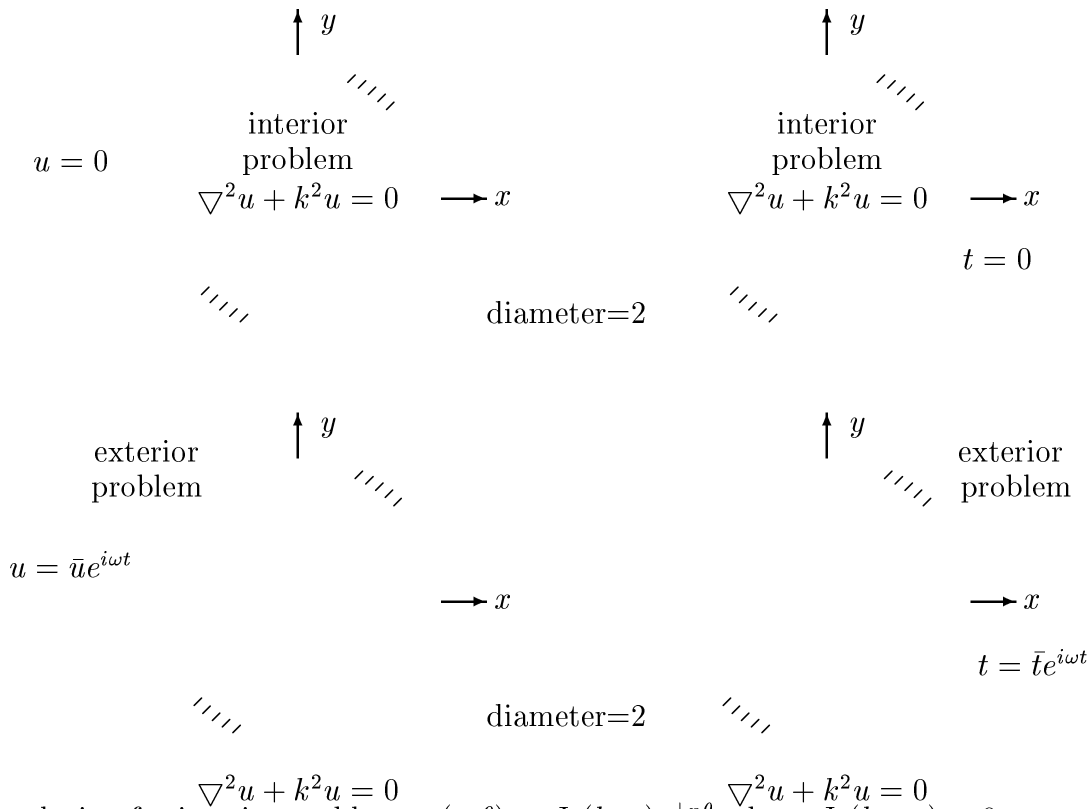
程式 11 Dual BEM for acoustic problems



Exact solution for interior problem: $u(r,\theta) = J_n(k_{nm})e^{\pm n\theta}$ where $J_n(k_{nm}a) = 0$.

(1). Interior problem with the homogeneous Dirichelet boundary condition $u(a,\theta) = 0$
Plot $det[U(k)]$ versus k and lot $det[\bar{L}(k)]$ versus k

Exact solution for interior problem: $u(r,\theta) = J_n(k_{nm})e^{\pm n\theta}$ where $J_n'(k_{nm}a) = 0$

(2). Interior problem with the homogeneous Neumann boundary condition $t(a,\theta) = 0$
Plot $det[\bar{T}(k)]$ versus k and plot $det[M(k)]$ versus k

Exact solution for exterior problem: $u(r,\theta) = \frac{H_n^{(1)}(kr)}{H_n^{(1)}(ka)}cos(n\theta)$

(3). Exterior problem with the nonhomogeneous Dirichelet boundary condition $u(a,\theta) = cos(n\theta)$
Plot $det[U(k)]$ versus k
Plot $det\{[-\bar{L}(k)] + 2\pi[I]\}$ versus k
Plot $u_r(5,0)$ versus k and plot $u_i(5,0)$ versus k.

Exact solution for exterior problem: $u(r,\theta) = \frac{H_n^{(1)}(kr)}{H_n^{(1)}(ka)}cos(n\theta)$

(4). Exterior problem with the nonhomogeneous Neumann boundary condition $t(a,\theta) = \frac{kH_n^{(1)'}(ka)}{H_n^{(1)}(ka)}cos(n\theta)$
Plot $det\{[-\bar{T}(k)] + 2\pi[I]\}$ versus k and plot $det[M(k)]$ versus k
Plot $u_r(5,0)$ versus k and plot $u_i(5,0)$ versus k.

References

[1] J. T. Chen, K. H. Chen, I. L. Chen and L. W. Liu, 2003, A new concept of modal participation factor for numerical instability in the dual BEM for exterior acoustics, Mechanics Research Communications, Vol.26, No.2, pp.161-174. (SCI and EI)