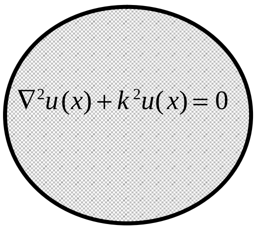
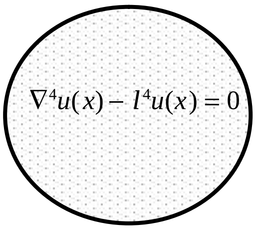
程式 67　CHEEF technique for meshless method



Membrane



Plate

For membrane or acoustic eigenproblem

Single-layer potential approach	Double-layer potential approach
$u(x) = \sum U(s,x) f(s)$ $t(x) = \sum L(s,x) f(s)$	$u(x) = \sum T(s,x) y(s)$ $t(x) = \sum M(s,x) y(s)$
CHEEF constraints ? Null-field integral equation ?	

For plate eigenproblem

$$u(x_i) = \sum P(s_j, x_i) p_j + \sum Q(s_j, x_i) q_j ,$$

where four kernels (U , Θ , M and V) can be chosen as P and Q, respectively.

$$U(s,x) = \mathrm{Im}\{-\frac{i}{8l^2}\{H_0^{(1)}(lr) - H_0^{(1)}(ilr)\}\} ,$$

$$\Theta(s,x) = K_q(U(s,x)),\ where\ K_q(\cdot) = \frac{\partial(\cdot)}{\partial n},$$

$$M(s,x) = K_m(U(s,x)),\ where\ K_m(\cdot) = n\ \nabla^2(\cdot) + (1-n)\frac{\partial^2(\cdot)}{\partial n^2},$$

$$V(s,x) = K_v(U(s,x)),\ where\ K_v(\cdot) = \frac{\partial \nabla^2(\cdot)}{\partial n} + (1-n)\frac{\partial}{\partial t}[\frac{\partial^2(\cdot)}{\partial n \partial t}],$$

Boundary condition: $q(x) = K_q(u(x))$, $m(x) = K_m(u(x))$ and $v(x) = K_v(u(x))$

References

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2. J. T. Chen, M. H. Chang, K. H. Chen and S. R. Lin, Boundary collocation method with meshless concept for acoustic eigenanalysis of two-dimensional cavities using radial basis function, Journal of Sound and Vibration, Vol.257, No.4, pp.667-711, 2002.
3. I. L. Chen, J. T. Chen, S. R. Kuo and M. T. Liang, A new method for true and spurious eigensolutions of arbitrary cavities using the combined Helmholtz exterior integral equation formulation method, Journal of Acoustical Society of America, Vol.109, No.3, pp.982-998, 2001.