

# Roles of hypersingularity in boundary element method

## complementary constraints

Tikhonov regularization for inverse prob.

eigen problem using MRM  
1. augmented eigenvalues  
2. trivial mode

higher order element

boundary degenerate

corner problem

fictitious eigenvalue

adaptive BEM

secondary field calculation

condition number

symmetry formulation

image system

1. Hermite element

1. cutoff wall
2. sheet pile
3. crack
4. baffle
5. thin airfoil
6. antenna

$$(o) \begin{cases} [U](t)=[T](u) \\ [L^-](t)=[M^-](u) \end{cases}$$

$$(o) \begin{cases} [L](t)=[M](u) \\ [U^+](t)=[T^+](u) \end{cases}$$

$$(x) \begin{cases} [L^-](t)=[M^-](u) \\ [L^+](t)=[M^+](u) \end{cases}$$

$$(x) \begin{cases} [U^-](t)=[T^-](u) \\ [U^+](t)=[T^+](u) \end{cases}$$

1.  $\begin{cases} [U](t)=[T](u) \\ [L^-](t)=[M^-](u) \end{cases}$
2.  $\begin{cases} [U](t)=[T](u) \\ [L^+](t)=[M^+](u) \end{cases}$
3.  $\begin{cases} [L^-](t)=[M^-](u) \\ [L^+](t)=[M^+](u) \end{cases}$

1. kernel function
2. region of singularity
3. boundary condition

1. error estimator

1. hoop stress on boundary
2. tangent flux along boundary
3. regularized version for stress near boundary

1. pseudo-differential operator

$U(-1)$	$T(0)$
$L(0)$	$M(1)$

2.  $T, L$  is more stable than  $U, M$

1. double boundary integration

1. normal vector of dipole or dislocation

