

邊界元素法1998 第十五次作業

1. The four kernel functions for the semi-infinite domain with free end are shown below:

$$U(s, x) = \begin{cases} \frac{i}{k} e^{-ikx} \cos(ks), & 0 < s < x \\ \frac{i}{k} e^{-iks} \cos(kx), & s > x \end{cases} \quad (1)$$

$$T(s, x) = \begin{cases} -ie^{-ikx} \sin(ks), & 0 < s < x \\ e^{-iks} \cos(kx), & s > x \end{cases} \quad (2)$$

$$L(s, x) = \begin{cases} e^{-ikx} \cos(ks), & 0 < s < x \\ -ie^{-iks} \sin(kx), & s > x \end{cases} \quad (3)$$

$$M(s, x) = \begin{cases} -ke^{-ikx} \sin(ks), & 0 < s < x \\ -ke^{-iks} \sin(kx), & s > x \end{cases} \quad (4)$$

2. Determine the fictitious eigenvalues using direct method.

3. Determine the fictitious eigenvalues using indirect method.

4. The four kernel functions for the semi-infinite domain with fixed end are shown below:

$$U(s, x) = \begin{cases} \frac{-1}{k} e^{-ikx} \sin(ks), & 0 < s < x \\ \frac{-1}{k} e^{-iks} \sin(kx), & s > x \end{cases} \quad (5)$$

$$T(s, x) = \begin{cases} -e^{-ikx} \cos(ks), & 0 < s < x \\ ie^{-iks} \sin(kx), & s > x \end{cases} \quad (6)$$

$$L(s, x) = \begin{cases} ie^{-ikx} \sin(ks), & 0 < s < x \\ -e^{-iks} \cos(kx), & s > x \end{cases} \quad (7)$$

$$M(s, x) = \begin{cases} ike^{-ikx} \cos(ks), & 0 < s < x \\ ike^{-iks} \cos(kx), & s > x \end{cases} \quad (8)$$

5. Determine the fictitious eigenvalues using direct method.

6. Determine the fictitious eigenvalues using indirect method.

7. If the exterior Dirichlet boundary condition is changed to Neumann type, what happens ?