NTOU HRE BEM Final exam (J T Chen)

1. Explain fundamental solution and Green function (5%)

2. Explain dual BEM and hypersingularity. (5%)

3. Explain the degenerate kernel and Poisson integral formula.(5%)

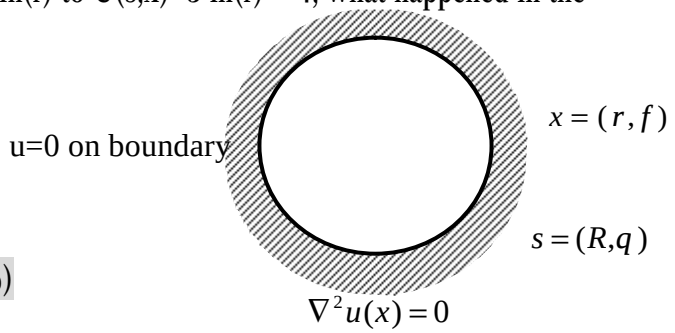
4. How to use the rigid body test for determining the diagonal coefficients for regular boundary and degenerate boundary. (5%)

5. Please explain the Gaussian quadrature, CPV and HPV. (5%)

6. How many advantages of BEM you know ? How many pitfalls you know (5%) ?

7. Please point out the differences of direct BEM, indirect BEM, fictitious BEM and MFS (method of fundamental solution) (5%)

8. If the fundamental solution is changed from U(s,x)=ln(r) to U(s,x)=3 ln(r) + 4, what happened in the BEM implementation ? (10%)

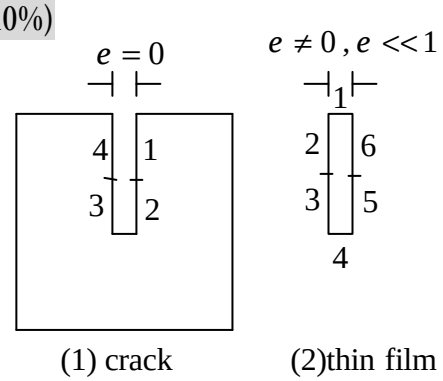


9. Write down the flowchart of BEM program. (10%)

10. Derive the Green's function (10%) and its degenerate form (10%). Also, derive the Poisson integral formula for the exterior case. (10%)

11. What are the single layer and double layer potentials ? (10%)

12. Construct the influence matrices (U, T, L and M) (10%)
    (1) crack boundary (2) thin film



(1) crack (2)thin film

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