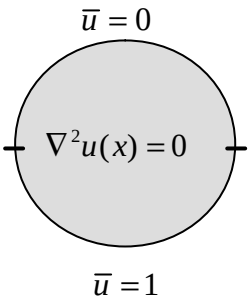
程式 80 Interior Laplace equation



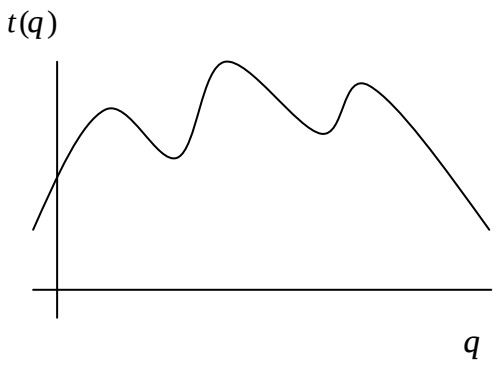
1. Exact solution $u(x,y)=\frac{1}{p}\tan^{-1}(\frac{1-x^2-y^2}{2y})$
2. Poisson integral formula $u(r,f)=\frac{1}{2p}\int_0^{2p}\frac{a^2-r^2}{a^2+r^2-2ar\cos(f-q)}f(q)dq$
3. Series solution using the null-field integral equation, Fourier series and degenerate kernels.

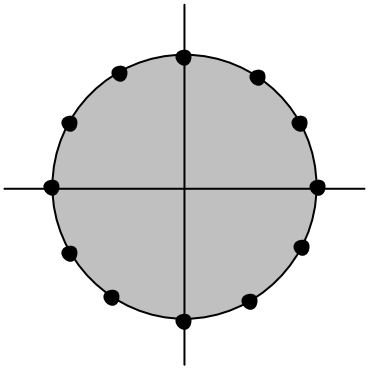
   $\bar{u}(q)=\sum_1^{\infty}(a_n\cos nq+b_n\sin nq)$ where a_n and b_n can be determined from B.C.

   $\bar{u}(q)=\begin{cases}0 & , \quad 0<q<p\\ 1 & , \quad p<q<2p\end{cases}$, $t(q)=\sum_1^{\infty}(p_n\cos nq+q_n\sin nq)$

   $u(r,f)=?$
4. BEM (BEPO2D program)

   示意圖





Contour plot of potential?

5. MFS (Dr. K. H. Chen)