Beprog 106 退化尺度-偏心圓

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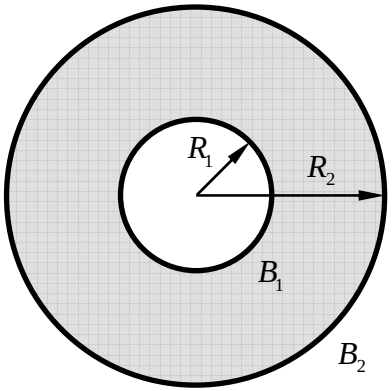
<td>李慶鋒
(2000)</td>
<td> 
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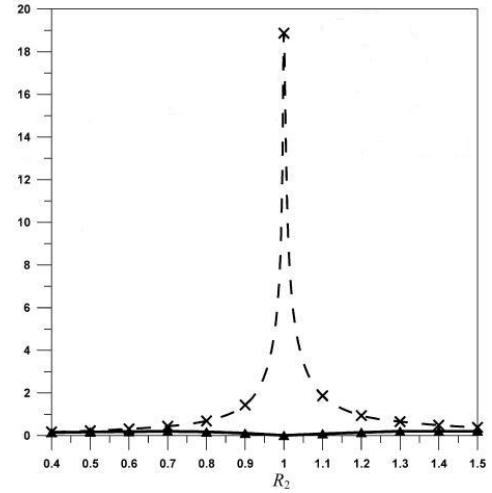
<td>Analytical solution [1]:
$$u(r)=u_2+\frac{\ln\frac{r}{R_2}}{\ln\frac{R_1}{R_2}}(u_1-u_2),\ R_1\le r\le R_2$$
$$B.\ C.:\ u_1(s)=100,\ s\in B_1,\ \ t_2(s)=\frac{100}{R_2\ln\frac{R_1}{R_2}},\ s\in B_2$$</td>
<td> 
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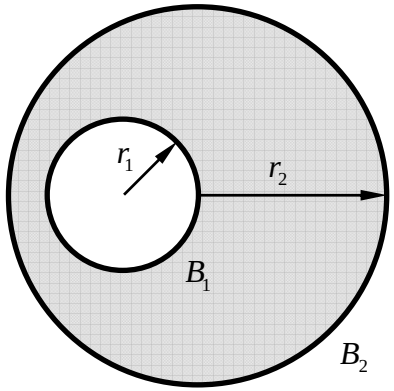
(2005)</td>
<td> 
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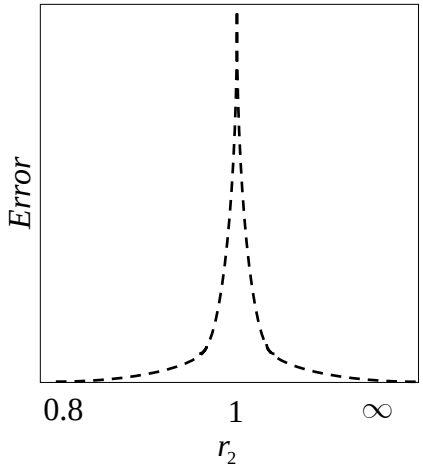
<td>Exact solution [2]:
$$u(\rho,\phi)=\frac{1}{2\ln 2}\ln[\frac{16\rho^2+1+8\rho\cos\phi}{\rho^2+16+8\rho\cos\phi}]\ \ (r_1=1.0,\ r_2=2.5)$$
$$u(\rho,\phi)=\frac{1}{2\ln 2}\ln[\frac{400\rho^2+4+80\rho\cos\phi}{25\rho^2+64+80\rho\cos\phi}]\ \ (r_1=0.4,\ r_2=1.0)$$
$$u(\rho,\phi)=\frac{1}{2\ln(\frac{\rho_2}{\rho_1})}\ln\{\frac{\rho^2+{c_1}^2+2c_1\rho\cos\phi}{[a^2\rho^2+({c_1}^2a^2+2c_1a+1)+(2c_1a^2+2a)\rho\cos\phi]{\rho_1}^2}\}$$
$$(r_1=0.4,\ r_2=r_2)\ \ \rho_1=\frac{\sqrt{1+4{r_1}^2a^2}-1}{2r_1a^2},\ \rho_2=\frac{\sqrt{1+4{r_2}^2a^2}-1}{2r_2a^2},\ c_1=\frac{a{\rho_1}^2}{1-a^2{\rho_1}^2}$$
$$B.\ C.:\ u_1(s)=0,\ s\in B_1,\ \ u_2(s)=1,\ s\in B_2$$</td>
<td> 
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References

1. Chen, J. T., Lee, C. F., Chen, I. L. and Lin, J. H., 2002, An alternative method for degenerate scale problem in boundary element methods for the two-dimensional Laplace equation, *Engineering Analysis with Boundary Elements*, Vol. **26**, No. 7, pp. 559-569.
2. Carrier, G. F. and Pearson, C. E., 1976, Partial Differential Equations, *Academic Press*, New York.
3. Lebedev, N. N., Skalskaya, I. P. and Uyand, Y. S., 1979, Worked problem in applied mathematics, *Dover*, New York.