Numerical solution for circular arc cracks in half plane elasticity

ABSTRACT

Numerical solutions for an elastic half plane with circular arc cracks subjected to uniaxial tension $\sigma_{\infty x} = p$ is presented. The free traction on the boundary of the half plane is assumed. Based on the modified complex potential and superposition method, the problem is formulated into a singular integral equation with the distribution dislocation function as unknown. Numerical examples exhibit the behavior of the stress intensity factor at the cracks tips for various positions. Our numerical results are in agreement with the existence one.

Keyword: Stress intensity factor; Singular integral equation; Circular arc crack; Half plane