

Numerical Approach for Solving the Hyper Singular Integral Equation in the Analysis of a Central Symmetrical Crack within an Infinite Strip

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Abstract : This study focuses on analyzing a Griffith crack situated at the center of an infinite strip. The problem is reformulated as a hyper-singular integral equation and solved numerically using second-order Chebyshev polynomials. The primary objective is to calculate the stress intensity factor in mode 1, denoted as K_I . The obtained results reveal the influence of the strip width and crack length on the stress intensity factor, assuming stress-free edges. Additionally, a comparison is made with relevant literature to validate the findings.

Keywords : center crack, Chebyshev polynomial, hyper singular integral equation, Griffith, infinite strip, stress intensity factor

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