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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 K1. 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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