

Finite Element Analysis of a Dynamic Linear Crack Problem

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Abstract : This paper addresses the problem of a linear crack located in the middle of a homogeneous elastic media under normal tension-compression harmonic loading. The problem of deformation of the fractured media is solved using the direct finite element numerical procedure, including the analysis of the dynamic field variables of the problem. A finite element algorithm that satisfies the unilateral Signorini contact constraint is also presented for the solution of the contact interaction of the crack faces and how this accounts for the qualitative and quantitative changes in the solution when determining the dynamic fracture parameter.

Keywords : harmonic loading, linear crack, fracture parameter, wave number, FEA, contact interaction

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