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NEW GENERALISED WEIGHT FUNCTION FOR STRESS INTENSITY FACTOR

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Abstract:

The aim of this paper is to propose a generic weight function for computation of the stress intensity factor in fracture mechanics. In the study presented in this paper, two generic state functions and a generic compliance are explicitly defined in terms of the crack depth ratio for smooth transition of unit stiffness between the intact and the collapse states. The main parameters of fracture mechanics are defined in terms of the generic compliance. The derived formulation for the stress intensity factor is used to derive the generic weight function. The proposed formulation is independent of the material and geometrical properties, and the structure type. The effectiveness of the work was verified using mathematical formulation and by comparison the results with those that exist in the literature.

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