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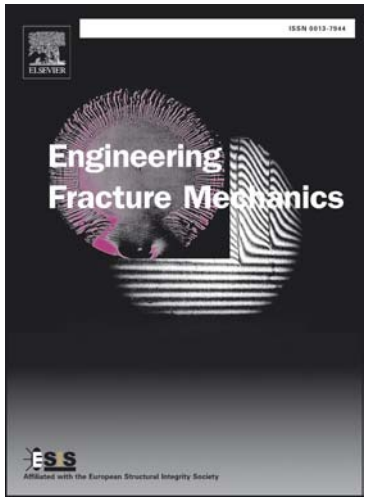

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A new two-dimensional cracked finite element for fracture mechanics

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Abstract

A novel finite element with a central crack is proposed for fracture applications. The introduced element is applicable in 2D problems. The crack is modeled by an additional flexibility matrix based on fracture mechanics. Among the topics discussed in this paper, the deficiencies of previous works related to cracked elements are modified. Furthermore, a method for calculating stress intensity factor (SIF) by applying cracked elements is suggested. To show the capability of the suggested element and proposed procedure, several numerical samples are performed.

Keywords: central crack, two-dimensional, fracture mechanics, stress intensity factor

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