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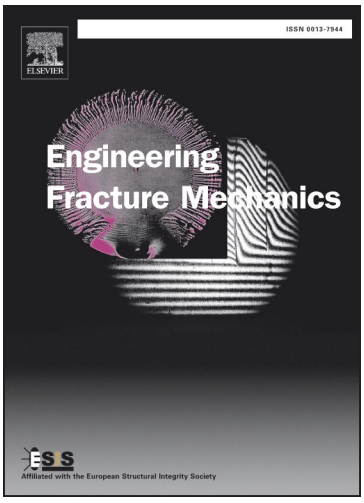

Investigation of fracture based on sequentially linear analysis

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Investigation of fracture based on sequentially linear analysis

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Abstract

There are different mathematical models describing the complex fracture behavior of quasi-brittle materials. In particular, the discrete and smeared crack models stand out in their ability to represent the gradually softening response of these materials. Their application requires the knowledge of experimentally determined fracture properties, such as the tensile strength and the fracture energy. Therefore, two different approaches are introduced in this paper to determine these material properties from a large set of standard notched three point bending tests. More specifically, the recently introduced inverse analysis based on a sequentially linear approach is compared with the commonly used work of fracture method and the main differences are highlighted.

Keywords: Inverse analysis, Sequentially linear analysis, Traction-separation relationship, Work of fracture, Cohesive crack, Digital image correlation

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