DYNAMIC BEHAVIOR TO SIF FOR CRACK GROWTH USING X-FEM

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ABSTRACT

In recent years, a new numerical method has been developed, the extended finite element method (X-FEM). The objective of this work is to exploit the (X-FEM) for the treatment of the fracture mechanics problems on 3D geometries, where we showed the ability of this method to simulate the fatigue crack growth into two cases: edge and central crack. In the results we compared the six first natural frequencies of mode shapes uncracking with the cracking initiation in the structure, and showed the stress intensity factor (SIF) evolution function as crack size propagation into structure, the analytical validation of (SIF) is presented. For to evidence the aspects of this method, all result is compared between FEA and X-FEM.

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