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Stress Intensity Factor for Dynamic Cracking of Composite Material by X-FEM Method

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Abstract : The work involves develops attended by a numerical execution of the eXtend Finite Element Method premises a measurement by the fracture process cracked so many cracked plates an application will be processed for the calculation of the stress intensity factor SIF. In the first we give in statically part the distribution of stress, displacement field and strain of composite plate in two cases uncrack/edge crack, also in dynamical part the first six modes shape. Secondly, we calculate Stress Intensity Factor SIF for different orientation angle θ of central crack with length (2a=0.4mm) in plan strain condition, KI and KII are obtained for mode I and mode II respectively using X-FEM method. Finally from crack inclined involving mixed modes results, the comparison we chose dangerous inclination and the best crack angle when K is minimal.

Keywords : stress intensity factor (SIF), crack orientation, glass/epoxy, natural frequencies, X-FEM
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