

Finite Element Model of Crack Growth under Mixed Mode Loading.

Abstract

In this paper, in order to predict the crack growth trajectory and to evaluate the SIF under mixed modes (I & II), one proposes a new finite element program for crack growth using the source code written in FORTRAN. The finite element mesh is generated using an advancing front method, where the generation of the background mesh and the construction of singular elements are also added to this developed programme to facilitate the crack process and the fracture analysis. Displacement Extrapolation Technique (DET) was employed to evaluate the SIFs under mixed mode loading conditions. Therefore, the accuracy of both SIF`s values and the crack path predictions results are compared and validated with other relevant published research work. However, the assessment indicated that this developed finite element programme is reliable and robust to evaluate the SIFs and predicts the crack trajectories successfully based on the applied loading conditions.

Authors: Souiyah Miloud , A. Muchtar , A. K. Ariffin , Malek Ali , M. I.Fadhel, (2012), Finite Element Model of Crack Growth under Mixed Mode Loading, International Journal of Materials Engineering, Vol.2(5), pp 67-74.

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1084.46&rep=rep1&type=pdf>