

A 3-D Tetrahedral Mesh Generation Toolkit for Fracture Mechanics

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Summary

A fully automatic mesh generation toolkit for three-dimensional crack analyses using tetrahedral elements is developed. It is based on the Delaunay triangulation and a concept of crack nodal patterns. It is combined with VCCM (Virtual Crack Closure Integral Method), which is extended by H. Okada et al. for tetrahedral elements. This toolkit, AutoMESH, is currently distributed as a free software in an open-source CAE system, ADVENTURE. Some examples of fracture analyses, including 3-D curved crack, are demonstrated.

