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Role of stress-state on initiation and growth of a fatigue crack

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1 Role of stress-state on initiation and growth of a fatigue
2 crack

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6 **Abstract**

A stress-state dependent cohesive model for fatigue is used for modelling mode-I crack initiation and growth. Plane strain simulations with cohesive elements whose traction-separation behaviour incorporates the stress-state of neighbouring continuum elements, were performed and compared with experimental data of an Aluminum alloy (AA 2219-T87). A combination of the fatigue damage model parameters is identified that is able to estimate the experimentally observed crack growth data. Further, a discussion is provided on the specific role of the stress-state on the initiation life and crack growth rates under sub-critical cyclic loading.

7 *Keywords:* Cohesive zone model, Fatigue, Triaxiality, Stress-state

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