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# PHASE-FIELD MODELLING OF INTERFACE FAILURE IN BRITTLE MATERIALS

**Arne Claus Hansen-Dörr[1], Paul Hennig[2], Markus Kästner[3], René de Borst[4]**

[1] Institute of Solid Mechanics, TU Dresden, Dresden, Germany, arne.hansen-doerr@tu-dresden.de
[2] Institute of Solid Mechanics, TU Dresden, Dresden, Germany, paul.hennig@tu-dresden.de
[3] Institute of Solid Mechanics, TU Dresden, Dresden, Germany, markus.kaestner@tu-dresden.de
[4] University of Sheffield, Department of Civil and Structural Engineering, Mappin Street, Sir Frederick Mappin Building, Sheffield S1 3JD, UK, r.deborst@sheffield.ac.uk

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Phase field models are a powerful approach to model cracks, especially when it comes to complex 3D geometries and a priori unknown crack paths. However, modelling adhesive failure along discrete interfaces is not straightforward since the usual models only account for cohesive damage. This drawback preponderates if state-of-the-art materials like modern composites are to be modelled.

In this work, a phase field model for interface failure between two materials is proposed: The interface is incorporated by a local reduction of the critical fracture energy. The formerly discrete adhesive interface is regularised over a finite length. Due to the use of a crack phase-field model [1], an interaction between the length scales of the crack and the material interface can be observed [2], that influence crack propagation.

In this contribution, we quantify the interaction in order to achieve reliable and universal results for crack propagation along the interface independent from the regularisation length scales. A local approach is presented to analyse the energy release rate at which the crack propagates along the interface, which is based on configurational forces and surfing boundary conditions [3].

Based on the local quantification approach, the interaction is compensated by scaling the numerical values of the fracture toughness assigned to the interface, yielding crack growth along the interface as if there was no bulk influence. Numerical examples are presented to support the method.

## REFERENCES

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