A thermodynamically consistent finite deformation elastoplastic-damage cohesive zone model fulfilling balance of angular momentum

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ABSTRACT

Cohesive zone models based on classical interface-type formulations represent a promising framework for analyzing localized material failure, e.g., cracks in (quasi-)brittle materials. Although cohesive zone models are well established and indeed frequently applied, fundamental principles such as thermodynamical consistency [1], balance equations (in particular, balance of angular momentum [2,3]) and material frame indifference are often ignored – particularly within a geometrically exact setting. Within this talk, a novel elastoplastic-damage model fulfilling the aforementioned fundamental principles is presented. The model is based on the frameworks elaborated in [1] and [3]. The talk is completed by implementational aspects.

REFERENCES

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