

Fracture and singularities of the mass density gradient field

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ABSTRACT

A continuum mechanical theory of fracture without singular fields is proposed. The primary contribution is the rationalization of the structure of a ‘law of motion’ for crack-tips, essentially as a kinematical consequence and involving topological characteristics. The thermodynamic driving force for crack-tip motion in solids of arbitrary constitution is a natural consequence of the model. The model naturally allows for interaction of macroscopic applied loads to interact with the evolution of crack-tips, represented by a field. The governing equations represent a new class of pattern-forming equations.

REFERENCES

[1] Amit Acharya. (2018) Fracture and singularities of the mass-density gradient field, *Journal of Elasticity*, 132, 243-260. (electronically published, January 2, 2018).