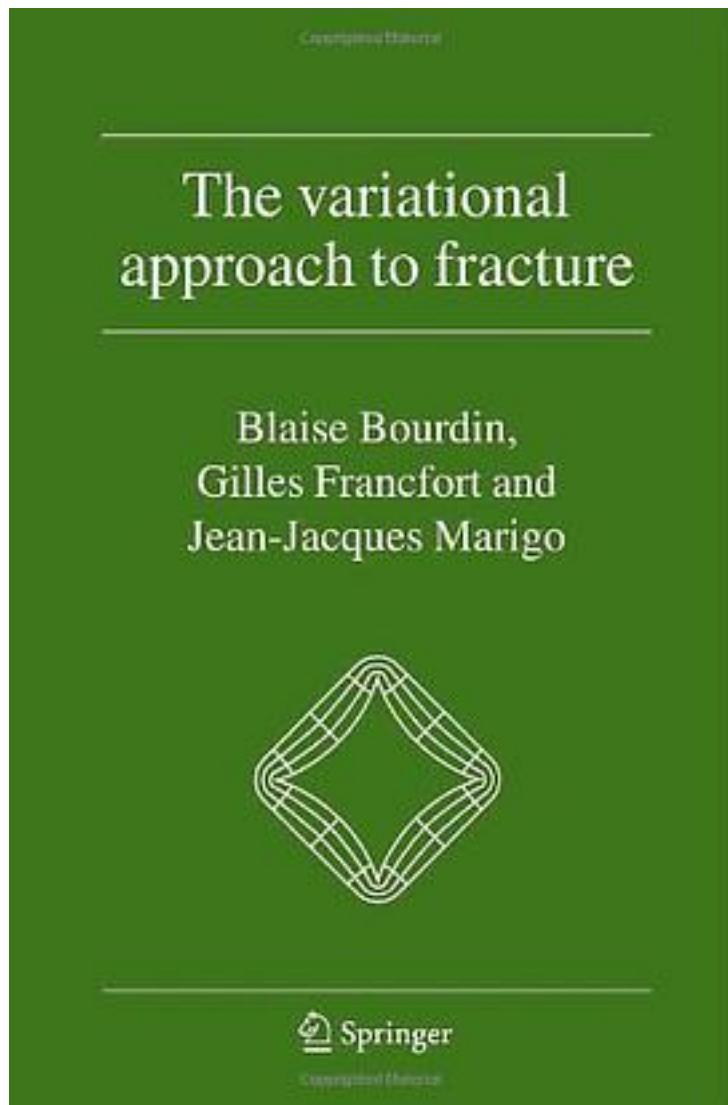


# The Variational Approach to Fracture



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出版者:

出版时间:2007-12

装帧:

isbn:9781402063947

This volume offers a panorama of the variational approach to brittle fracture that has developed in the past eight years or so. The key concept dates back to Griffith and consists in viewing crack growth as the result of a competition between bulk and surface energy. Griffith's insight in the light of the contemporary tools of the Calculus of Variations is revisited. Also, Barenblatt's contributions are imported and there is a continuous striving to gauge the respective merits of both types of surface energy. The advocated variational approach provides an incisive picture of initiation and propagation whose features are detailed. The material is mathematical in nature, but not overly preoccupied with technicalities. An effort is made to connect the approach with more classical treatments of fracture, and to illustrate the results in simple test settings, or through relevant numerical simulations. It is reprinted from "Journal of Elasticity" Vol. 91(1-3).

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