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Fracture Recess: Asymmetric Continuum Approach

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This presentation is based on the Asymmetric Continuum Theory, which could be applied both for the solids, fluids and extreme motions: fractures, vortices, turbulence and shock waves. This theoretical approach is based on the papers concerning the solid and fluid continua (Teisseyre, 2009, publ. in "Bull. Seismol. Soc. Am." ; Teisseyre, 2010: publ. in "Acta Geophys."; Teisseyre, 2011, publ. in "Bull. Seismol. Soc. Am." and Teisseyre, 2012, publ. in "Acta Geophys."). These papers lead us also to the fracture processes situated in a kind of fracture recess, where the continuum might contain both solid and fluid elements. A similarity to the solid-fluid debris-flow models by Hutter and Schneider (2010, publ. in "Continuum Mech. Thermodyn.", parts 1,2) is underlined.
In this approach the deformations and thus also strains are treated as the independent fields governed by the respective equations of motion. We derive such basic motion relations by an uniform approach; we extend our considerations to include also the extreme motions; a role of the release-rebound processes is underline.
Our aim is to present a new attempt to describe the fracture processes which may appear inside a kind of fracture recess in a solid body; here such a recess is considered as a mixed continuum with both the solid and fluid phases.