Skalenkaskaden in komplexen Systemen

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Modeling of lithospheric faults - demands, options, concepts

Abstract:

A state-of-art of models of lithosperic faults in Earth's upper mantel, based on continuum (thermo)mechanics of solids under small strains (and possibly large displacements) involving damage and plasticity will be presented. Various processes or phenomena may include heat transfer and phase transitions, a concept of poro-elastic rocks with water transport and porosity evolution, and wave emission/propagation during earthquakes. Mathematical aspects supporting also efficient numerical strategies are presented, together with some computational simulations launched by Roman Vodicka, Jan Valdman and Cristos Panagiotopoulos.