

Seismic waves and earthquakes in a global monolithic model

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A model of seismic sources during rupturing of lithospheric faults is combined with a model of propagation of the emitted seismic waves in a layered continuum, admitting also a viscoelastic (Boger) fluid and reflecting thus the Earth mantle/core structure. This model is approximated by a monolithic way, handling the damageable solid (with the phase-field crack model) and the Boger fluid in a unified way. Numerical simulations showing rupture on pre-existing fault, wave propagation and S-wave reflection performed by Roman Vodicka is shown, together with another experiment where a new fault and a surface depression are born.