



Elasticity and Structural Instabilities with Thermo-mechanical Feedback

Yuri Podladchikov

University of Oslo, PGP, Oslo, Norway (yuripo@fys.uio.no)

Slow tectonic strain rates are not able to build large stresses at high temperature due to viscoelastic relaxation. However GPa-level stresses can be built by much faster magmatic, metamorphic and earthquakes cycle related process leading to storage of significant amount of elastic energy. This elastic energy can be released by structural instabilities at rates much larger than the background rates of deformation. These fast strain rates cause large creep stresses and rate of heat dissipation leading to thermal runaway instability. Quantification of interplay of structural and thermal runaway instabilities will be presented.