Rupture propagation along a frictional interface: The onset of frictional motion

Seminario
Data: Giovedì, 4 Luglio, 2013 - 15:30
Aula: Aula Arduino
Relatore: Prof. Jay Fineberg
Abstract:

I will describe laboratory experiments on the frictional slip along a rough and spatially extended interface. Utilizing simultaneous measurements of the real area of contact together with measurements of the spatial profile of the stresses adjacent to the interface, we can perform real-time observations of how interface ruptures that lead to slip events take place. We will present real-time observations of the how slip is born. We observe distinct modes of interface rupture and relate their propagation velocity to stresses along the interface that exist *prior* to rupture nucleation. These include ruptures that are limited by the Rayleigh wave speed of the material, supershear ruptures and slow rupture fronts that propagate at velocities that are nearly two orders of magnitude more slowly. These modes should be akin to rupture modes that occur along natural faults.

We will also present new results on the structure of the stress fields that surround rupture tips while they are propagating. These demonstrate that many features of these fields can be quantitatively described by classic fracture mechanical solutions describing shear fracture.

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Allegato	Dimensione
Jay Fineberg short CV.pdf	14.25 KB

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