



DIPARTIMENTO
DI GEOSCIENZE



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Seminario

L'innescò di un terremoto: lento (slow nucleation) o brusco (abrupt nucleation)?

Martedì, 24 aprile 2018 – ore 16:30

Aula Arduino

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Abstract:

Rupture on earthquake faults is either preceded by days to months of aseismic creep (indicated by foreshock sequences and geodetic transient anomalies--possibly associated to a slow nucleation process) or starts abruptly with no significant precursory activity (abrupt nucleation). Here we provide evidence of a series of factors controlling earthquake nucleation and the size and the duration of the nucleation phase, using faults simulated in laboratory experiments and numerical models.

Smooth faults show a two-phase nucleation process (slow nucleation) with variable size and duration depending on normal stress and frictional parameters. On rough faults, instead, initiation of rupture is primarily controlled by the size and the amount of inhomogeneity induced by the fault topography and its interplay with the normal stress (fast nucleation). Earthquake nucleation is not predicted by friction laws, but rather by energy considerations more akin to Griffith's criterion in the presence of flaws.

Proponente: Giulio Di Toro