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E AMBIENTALE

Avviso di Seminario

Giovedì 21 maggio 2026

h. 15.00-16.00 – Aula Caminetto (Sede di Santa Marta)

The mechanism of deep earthquakes and failure waves as instabilities of nucleation and growth of a phase change defect

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Abstract

An arbitrarily small defect of phase change in density and change in moduli can nucleate and grow at constant potential energy under high pressure at a critical loading. The self-similarly expanding ellipsoid possesses the “lacuna” property: the particle velocity vanishing in the interior domain. We derive the flow of energies across the moving phase boundary of this type of inclusion. The solution explains the generation of a shear seismic source radiation in deep-focus earthquakes under “volume collapse”; also the generation of failure waves (producing a zone with micro-fractures under compression in lima glass), and has wider applications to amorphization defects, defects in alloys, planetary impacts, etc.