Special
PHYSICAL MATHEMATICS SEMINAR

QUASI-STATIC DEFORMATION IN ATHERMAL, AMORPHOUS SOLIDS

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ABSTRACT:

Athermal, quasi-static deformation provides essential insights in the mechanical response of amorphous solids: in this limit, elasticity and plasticity can be exactly separated and they can be studied in great details using both analytical and numerical tools. Elasticity involves non-affine displacements fields which impact quantitatively the macroscopic values of the elastic moduli of amorphous solids. Plasticity involves "cascades" of local rearrangements associated with quadrupolar energy fluctuations. A finite size scaling analysis reveals subextensive scaling of the energy dissipated per plastic event: this indicates that the cascades of local rearrangements are system-spanning events. These observations help us better understand some of the physical problems that must be tackled in order to construct physical models of deformation in amorphous materials.

FRIDAY, SEPTEMBER 9, 2005
1:00 PM
Building 2, Room 255

Refreshments at 2:00 PM in Building 2, Room 349.