



**TIFR Centre for Interdisciplinary Sciences,
Narsingi, Hyderabad 500075**

Seminar

**Non-affine displacements and the origin of elastic
heterogeneties in a solid**

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Abstract: We investigate deformation behaviour of crystalline solids using concepts, such as non-affineness of deformations, originating in recent studies of glasses and granular materials. We show that, unlike amorphous systems, non-affineness in crystals may be unambiguously defined using a projection of all displacements away from a unique reference state onto orthogonal, affine and non-affine subspaces. After obtaining the statistics of non-affine deformations in 1-d and 2-d crystals, we show that under external stress non-affine ness may be generated giving rise to heterogeneities. We discuss possible implication of our work on the failure behaviour of solids.

Date: Wednesday, January 30th 2013

Time: 11:30AM (Tea/Coffee at 11:15AM)

Venue: Conference Hall, TCIS

All are cordially invited