

ICTS Colloquium

Title : Fragile Matter

Speaker : Bulbul Chakraborty, Brandeis University, USA

Date : Monday, October 8, 2018

Time : 3:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Systems that have been relatively unexplored in statistical physics are collections of macroscopic particles for which both quantum and thermal fluctuations are irrelevant. In these systems, typified by sandpiles, external forces such as gravity create rigid and flowing states. Surprisingly, the fluid states can also self-organize in response to external stresses to resist the stress and become more rigid. The mechanical integrity of these marginal solids is reliant on a filamentary network of stress-bearing structures. Recent experimental and numerical observations in dry grains and dense suspensions have highlighted the role played by such networks on jamming and flow. In this talk, I will give an overview of my recent work, which has been a quest to establish robust physical principles that govern fluctuations and response in athermal, disordered systems where friction and dissipation are important, thermal motion is absent, and cohesion is induced by imposed mechanical stresses.