

ICTS Statistical Physics Journal Club Seminar

- Title** : Models for the yielding behaviour of amorphous solids
- Speaker** : Srikanth Sastry (Jawaharlal Nehru Centre For Advanced Scientific Research, Bengaluru)
- Date** : Thursday, 22nd April 2021
- Time** : 03:00 pm (IST)
- Abstract** : Investigations of plastic deformation and yielding of amorphous solids reveal a strong dependence of their yielding behaviour on the degree of annealing. Above a threshold degree of annealing, the nature of yielding changes qualitatively, becoming progressively more discontinuous. Theoretical investigations of yielding in amorphous solids have almost exclusively focused on uniform deformation, but cyclic deformation reveals intriguing features that remain uninvestigated. Focusing on athermal cyclic deformation, I describe a family of models, which reproduce key features observed in simulations, and provide an interpretation for the intriguing presence of a threshold energy. The dynamics of the model has a mapping to a first passage problem in a reformulation, that leads to new insights, which will be discussed. Extension of the models to incorporate interactions among mesoscopic blocks and spatially heterogeneous behaviour will also be discussed.

References

- 1) H Bhaumik, G Foffi, S Sastry, The role of annealing in determining the yielding behavior of glasses under cyclic shear deformation, Proc. Nat. Acad. Sci (USA) 118 (16) e2100227118 (2021)
- 2) S. Sastry, Models for the yielding behaviour of amorphous solids, arXiv:2012.06726

- Venue** : Please click on the below link to join the meeting.

<https://zoom.us/j/97753585052?pwd=ZlFDZy96czVjNGJMcGhRNU4vcGVWZz09>

Meeting ID: 977 5358 5052

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