

## **Students' Annual Webinar**

### **Universal stress correlations in crystalline and amorphous packings**

#### **Roshan Kumar Maharana**

We present a universal characterisation of stress correlations in athermal systems, across crystalline as well as amorphous packings. We present numerical results for static configurations of particles interacting through harmonic as well as Lennard-Jones potentials, for a variety of preparation protocols and ranges of microscopic disorder. We show that the properties of the stress correlations at large lengthscales are surprisingly universal across all situations, independent of structural correlations, or the correlations in orientational order. In the near-crystalline limit, we present exact results for the stress correlations for both models, which work surprisingly well at large lengthscales, even in the amorphous phase. Finally, we study the differences in stress fluctuations across the amorphisation transition, where the stress correlations reveal the loss of periodicity with increasing disorder.

***Friday, Mar 3<sup>rd</sup> 2023***

***4:00 PM (Tea / Coffee 3.45 PM)***

***Seminar Hall, TIFR-H***