

Seminar

New method to compute force chains in granular media

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The determination of the normal and tangential (frictional) interparticle forces within a granular medium is a long standing problem. First, the overlaps between grains are much smaller compared to the size of grains, which makes the direct measurement of contact forces experimentally challenging. Second, the condition of mechanical equilibrium is necessary but not sufficient to determine all contact forces uniquely. We present a new formalism ^[1] which employs the knowledge of the external forces and the orientations of contacts between particles, to compute all the inter-particle forces uniquely. Having solved this problem we exemplify the efficacy of the formalism showing that the force chains in such systems are determined by an expansion in the eigenfunctions of a newly defined operator.

References:

[1] Oleg Gendelman, Yoav G. Pollack, Itamar Procaccia, Shiladitya Sengupta and Jacques Zylberg, "What determines the static force chains in stressed granular media?" , *Phys. Rev. Lett.*, 116, 078001 (2016). *arXiv:1505.06626*.

Thursday, Apr 21st 2016

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS