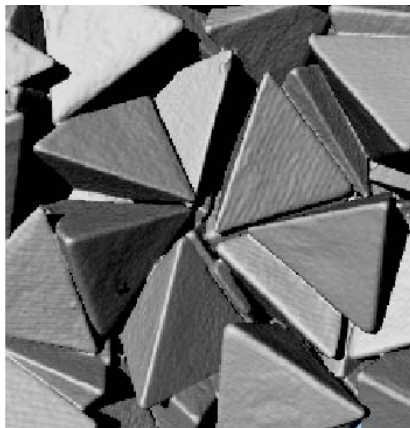




Insight from inside: X-ray tomography of particulate systems

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The elastic, frictional, dissipative, and sometimes cohesive interactions between individual particles are rather well understood.

However, if we bring several hundred thousand particles together in a granular sample, new properties emerge from this seemingly simple interactions. How does a granular material gain mechanical stability when its density is increased? What mechanism drives dilatancy, the expansion of sheared dense granular matter? Why do particles in a rotating drum segregate in size? Why is the dynamics in fluidized bed heterogeneous?

Answering these questions requires gaining comprehensive information on a particle level; from a system that is opaque to optical light. This is why the advent of X-ray tomography, combined with 3D image processing, became a game changer. This talk will review some recent progress.