Compaction of frictional octahedra N. NIRMAL THYAGU, MAX NEUDECKER, STEPHAN HERMINGHAUS, MATTHIAS SCHROETER, Max Planck Institute for Dynamics and Self-Organization, Goettingen, Germany — We perform experiments with frictional polypropylene octahedra to study the packing properties. Starting with the loose packing, compaction of octahedra is done by two types of forcing – a) tapping and b) shearing. The compaction gives rise to crystallization of octahedra due to heterogenous nucleation from the walls. We obtain the X-ray tomograms of the packing configurations as a function of packing fraction. From the contact geometries we obtain results for the packings such as - pair correlation function, distance to isostaticity, and spatial & angular correlation functions. We contrast these results with a similar study on the simplest platonic solid, the tetrahedron[1] and the sphere.

[1]Jammed frictional tetrahedra are hyperstatic, M. Neudecker, S. Ulrich, S. Herminghaus, M. Schröter. (arXiv:1202.6272v2)

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