

Abstract Submitted
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Jammed frictional tetrahedra are hyperstatic MATTHIAS SCHRÖTER, MAX NEUDECKER, STEPHAN HERMINGHAUS, Max Planck Institute for Dynamics and Self-Organization (MPIDS), STEPHAN ULRICH, Leiden University — We prepare packings of frictional tetrahedra with volume fractions ϕ ranging from 0.469 to 0.622 using three different experimental protocols under isobaric conditions. Analysis via X-ray micro-tomography reveals that the contact number Z grows with ϕ , but does depend on the preparation protocol. While there exist four different types of contacts in tetrahedra packings, our analysis shows that the edge-to-face contacts contribute about 50% of the total increase in Z . The number of constraints per particle C increases also with ϕ and even the loosest packings are strongly hyperstatic i.e. mechanically over-determined with C approximately twice the degrees of freedom each particle possesses.

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