

Abstract Submitted
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Spontaneous Patterning of Confined Granular Rods JENNIFER GALANIS, DANIEL HARRIES, DAN SACKETT, NIH, WOLFGANG LOSERT, U. of Maryland, RALPH NOSSAL, NIH — Vertically vibrated rod-shaped granular materials confined to quasi-2D containers self organize into distinct patterns. We find, consistent with theory and simulation, a density dependent isotropic-nematic transition. Along the walls, rods interact sterically to form a wetting layer. For high rod densities, complex patterns emerge as a result of competition between bulk and boundary alignment. A continuum elastic energy accounting for nematic distortion and local wall anchoring reproduces the structures seen experimentally.

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