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Confinement and symmetry breaking in vibrofluidized granular rods JENNIFER GALANIS, National Institutes of Health, WOLFGANG LOSERT, University of Maryland — We study the behavior of vertically vibrated rod-shaped granular materials with an aspect ratio (length-to-diameter ratio) of 40 to 80 confined to a quasi-two-dimensional horizontal plane. The containers are elliptical, with a minor-to-major axis ratio of 0.7 to 1.0. Similar to previously published results, we find that an isotropic to nematic-like transition occurs that is dependent on rod length and density. The shape of the container also influences this phase transition. The critical point of the phase transition decreases as eccentricity increases. Also, the time required to transition from an isotropic to nematic-like state shortens, and the nematic-like state orients along the major axis.

Jennifer Galanis
National Institutes of Health

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