

Abstract Submitted
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Thermostatistics of a Single Sphere in a Non-Gaussian Granular Bath KRISTIN COMBS, JEFFREY OLAFSEN, Department of Physics, Baylor University, ALEXIS BURDEAU, PASCAL VIOT, Laboratoire de Physics Theorique de la Matiere Condensee, Universite Pierre et Marie Curie — Velocity statistics of a single Delrin monomer on a shaken dimer lattice are examined to understand energy injection in a larger bilayer system of several thousand Delrin spheres driven atop a dimer lattice. In the larger cell, robust Gaussian statistics are found for the Delrin spheres, while in the smaller cell the upper single particle exhibits slightly non-Gaussian velocity statistics due to the presence of defects in the strongly non-Gaussian lower dimer layer. The smaller cell geometry makes these defects more prevalent, but it is their presence and not the dissipative effects of the sidewalls that leads to the non-Gaussian statistics. The defects allow the upper tracer particle to periodically become trapped in the valleys between the particles of the dimer layer. In addition, a simulation of a sphere receiving impulse kicks from a non-Gaussian bath demonstrates that the presence of a viscous drag, potentially associated with the defects, acts to increase the dissipation in the system and the associated kurtosis of the tracer particle.

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