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Sound Waves in a Homogeneously Driven Granular Fluid in Steady State KATHARINA VOLLMAYR-LEE, Bucknell University, ANNETTE ZIPPELIUS, TIMO ASPELMEIER, Georg-August-Universitaet Goettingen, Germany — We study the collective dynamics of a granular fluid of hard spheres, driven into a stationary non-equilibrium state by balancing the energy loss due to inelastic collisions with the energy input due to driving. The driving is chosen to conserve momentum, so that fluctuating hydrodynamics predicts the existence of sound modes. We present results of computer simulations which are based on an event driven algorithm. The dynamical structure factor $F(q, \omega)$ is determined for volume fractions 0.05, 0.1 and 0.2 and coefficients of normal restitution 0.8 and 0.9. We observe sound waves, determine their dispersion and compare our results with the predictions of generalized fluctuating hydrodynamics.

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