Abstract Submitted
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Kinetic theory of hydrodynamic response functions for a dense granular fluid JAMES DUFTY, Department of Physics, University of Florida, APARNA BASKARAN, Physics Department, Syracuse University, JAVIER BREY, Fisica Teorica, Universidad de Sevilla, Sevilla, Spain — The general response functions characterizing the response of a homogeneous isolated granular fluid to small spatial perturbations in the hydrodynamic fields have been described recently [1]. These response functions are time correlation functions for the Homogeneous Cooling State. Special cases of this class of time correlation functions are the Green - Kubo expressions for the hydrodynamic transport coefficients. In this work, these functions are expressed in terms of reduced singe particle functions that are expected to obey a linear kinetic equation. The functional assumption required to obtain such a kinetic equation and its relationship to the well studied Boltzmann and Enskog kinetic theories of a granular fluid are illustrated in the particular context of the shear viscosity of this fluid. [1] J. W. Dufty, A. Baskaran and J. J. Brey, J. Stat. Mech. L08002 (2006).

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