Comparison of two quadrature-based moment methods for simulating dilute granular gases RODNEY FOX, ALBERTO PASSALACQUA, Iowa State University, PRAKASH VEDULA, University of Oklahoma, JASON YUAN, Iowa State University — A dilute non-isothermal inelastic granular gas between two stationary Maxwellian walls is studied by means of numerical simulations of the Boltzmann kinetic equation with a hard-sphere collision kernel for mono-dispersed particles. Two types of quadrature-based moment methods with different orders of accuracy in terms of the moments of the distribution function are used with four different inelastic collision models. The models differ in the manner with which the moment equations are closed and in the number of moments that can be controlled for a given number of quadrature points. Results from the kinetic models are compared with the predictions of molecular dynamics simulations of a nearly equivalent system.

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