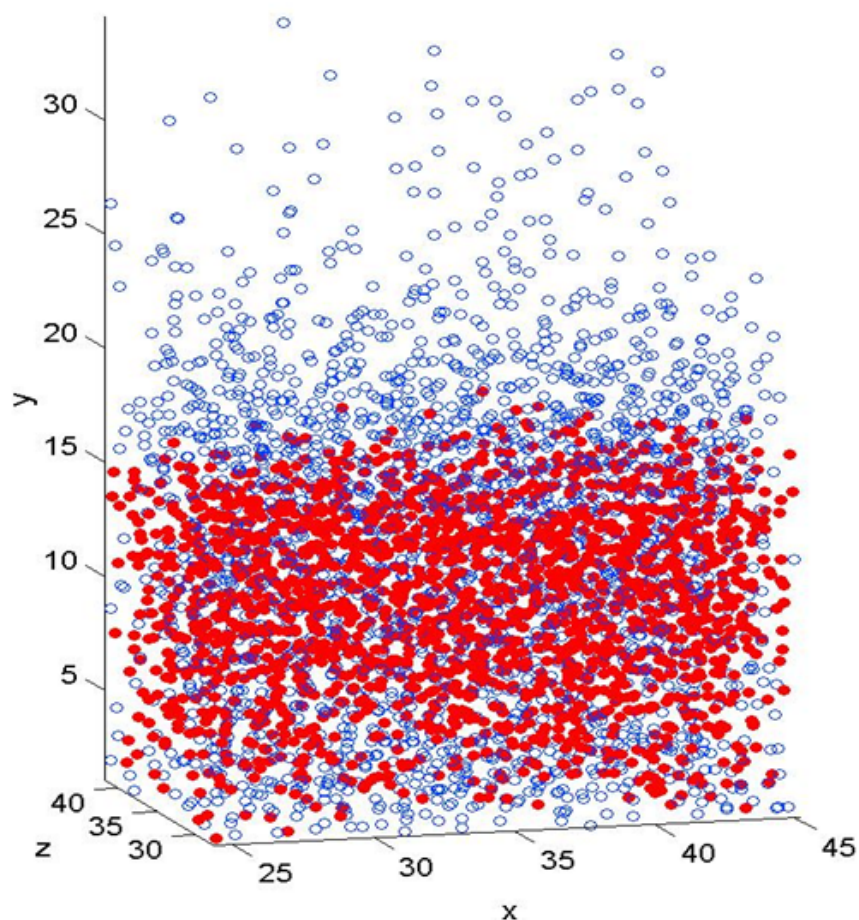


Layering effects in vertically vibrated binary mixtures of granular gases

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One of the most interesting features of granular systems is their tendency to spontaneously segregate under external forcing, a common example being vertical shaking. When highly agitated, a granular system can become fluidized enough so that the grains interact by nearly-instantaneous binary collisions, in which case it is referred to as a “granular gas”.

A hydrodynamic description of a binary mixture of granular gases, derived from the pertinent Boltzmann equation, is applied to the analysis of a vertically vibrated system under gravity. The latter is found to exhibit sandwich-like segregation patterns as a result of the competition between buoyancy and thermal diffusion.