

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Low-frequency oscillations in vibrated granular columns. NICOLAS RIVAS, Helmholtz Institute Erlangen-Nuremberg, ANTHONY THORNTON, KIT WINDOWS-YULE, University of Twente, DAVE PARKER, University of Birmingham, STEFAN LUDING, University of Twente — We present simulations, experiments and theoretical treatments of vertically vibrated granular media. The systems considered are quasi-one-dimensional. This column geometry makes it possible to study collective oscillations of the grains with a characteristic frequency that is much lower than the frequency of energy injection (LFOs). Using event-driven molecular dynamics simulations we see that LFOs become slower and more pronounced as the shaking of the container increases. Experimental observations, using the positron emission particle tracking technique, agree well with the simulated data. The conditions necessary for the existence of LFOs are derived from a granular continuum model, which is able to relate the column density profile with the measured characteristic frequencies

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Date submitted: 29 Jan 2016

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