

Abstract Submitted
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Nonlinear bounded convection and a phase separation instability in a dilute granular gas PRIYANKA SHUKLA, Indian Institute for Science Education and Research, Kolkata, India, MEHEBOOB ALAM, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560064, India — A weakly nonlinear analysis using Stuart-Landau equation has been carried out to understand the onset of buoyancy-induced convection and a phase-separation instability of a dilute granular gas in a bounded domain. Previous linear stability analysis of the same base state showed that the conduction state is unstable for a range of Froude number and heat-loss parameter. A new instability mode has been found at very small values of the heat loss parameter, the origin of which is shown to be connected to the classical Rayleigh-Benard instability. The bifurcation diagrams and the supercritical and subcritical nonlinear patterns with respect to inelasticity and Froude number will be discussed.

Meheboob Alam
Jawaharlal Nehru Centre for Advanced Scientific Research,
Bangalore 560064, India

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