Abstract Submitted
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Hopping dynamics of granular kinks[1] CLAUDIO FALCON, JUAN MACIAS, Univ. de Chile — We report on the experimental observation and theoretical characterization of the bifurcation diagram, dynamical properties and fluctuations of spatially modulated kinks in a shallow one-dimensional fluidized granular layer subjected to a periodic air flow. We show the appearance of these solutions as the layer undergoes a parametric instability. Due to the inherent fluctuations of the granular layer, the kink profile exhibits an effective wavelength, termed *precursor*, which modulates spatially the homogeneous states and drastically modifies the kink dynamics. We characterize the average and fluctuating properties of this solution. The long term evolution of these kinks is dominated by a hopping dynamics, related directly to the underlying spatial structure and inherent fluctuation. The properties of this motion can be described by a brownian particle in a symmetric periodic potential. Both the noise intensity of the brownian fluctuations and the amplitude and periodicity of the potential arise from the underlying precursor structure.

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