

Abstract Submitted
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Nonlinear Breathing in Compressed Granular Chains ROBERT SIMION, SUNY at Buffalo, ADAM SOKOLOW, Duke University, SURAJIT SEN¹, SUNY at Buffalo — When a compressive applied force at the zero frequency limit is applied on confined granular alignments it is shown to result in tunable and higher frequency *nonlinear granular breathing*. We use extensive dynamical simulations and simple arguments to probe the origins of these breathing processes. In the presence of dissipation, the breathing has a lifetime that is inversely proportional to the dissipation constant. The possible use of the concept of nonlinear granular breathing in recovering the energy released at the beaches by surface gravity waves using a system made largely of non-moving parts is mentioned as a possible application. In closing, studies on the effects of time dependent applied forces will be summarized.

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Surajit Sen
SUNY at Buffalo

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