

Abstract Submitted  
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**Granular compaction under confinement** NATHAN MUEGGENBURG, Lake Forest College — A granular pack that is vertically vibrated undergoes rearrangements and often progresses to more dense configurations. The experiments presented here study the role of dilation in this granular compaction process. By applying a confining force to the granular pack during vibration, the dilation is inhibited and the compaction is greatly reduced. In general, systems with different accelerations during vibration will compact differently. However, these systems will compact in the same manner if the confining force is tuned to result in the same amount of dilation. Under large confining forces, there is very little dilation. In this regime, the compaction is significantly slowed and may approach a steady state packing fraction of approximately 0.60, consistent with ideas of a critical packing fraction for the onset of dilation.

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