

Abstract Submitted  
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**Properties of grains driven by an oscillating disk** KIRI NICHOL,  
MARTIN VAN HECKE, Leiden University — A container of glass beads driven  
by a rotating disk exhibits properties of a liquid - low density objects float at the  
depth predicted by Archimedes' law and sinking objects experience a viscous drag  
force. However, when the beads are driven by oscillating the disk, a surprising  
state emerges which exhibits unliquid-like behaviour: a light object submerged in  
the grains remains stuck, as if in a solid. As the oscillation amplitude is increased,  
the liquid-like character of the system is restored, although some surprising effects  
are observed due to contraction and dilation that occurs when the disk reverses  
direction.

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