

Abstract Submitted
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Chaotic three particle dynamics in a viscous liquid filled rotating drum JAMES E. DAVIDHEISER, ERIC R. WEEKS, PHIL SEGRE, Physics Dept., Emory University — We conduct experiments to study the motions of three heavy spheres moving within a viscous liquid filled rotating cylindrical drum. Numerous works, in other geometries, demonstrated that assemblies of non-Brownian particles in viscous liquids have the potential to exhibit chaotic motion. We find that as the drum rotation rate ω is varied, there are several distinct periodic states as well as fully chaotic states. We track the motion of the spheres using a digital camera and custom particle tracking software. From our data, we characterize the chaotic trajectories as ω is varied.

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