

Abstract Submitted
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Complex three particle dynamics in a viscous liquid filled rotating drum. JAMES DAVIDHEISER, PHIL SEGRE, Dept. of Physics, Emory University — We will describe experiments on the motions of three heavy spheres moving within a viscous liquid filled rotating cylindrical drum. Numerous works, in other geometries, have demonstrated that assemblies of non-brownian particles in viscous liquids have the potential to exhibit chaotic motion. We find that at the lowest drum rotation rates ω , the beads first undergo a transformation from fixed-point to periodic motion as ω is increased. At the highest rotation rates, the motion is also periodic. At intermediate rates ω , however, the particles exhibit very complex and apparently chaotic trajectories. Our results, which will be presented in the form of particle trajectories in time obtained using digital particle tracking software, demonstrate how these complex trajectories vary with ω .

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