Abstract Submitted
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Shape effects in the turbulent tumbling of large particles[1] EVAN VARIANO, THERESA OEHMKE, NIMISH PUJARA, University of California, Berkeley — We present laboratory results on rotation of finite-sized, neutrally buoyant, anisotropic particles in isotropic turbulence. The isotropic turbulent flow is generated using a randomly-actuated synthetic jet array that minimizes tank scale circulation and measurements are made with stereoscopic particle image velocimetry. By using particles of different shapes, we explore the effects that symmetries have on particle rotation. We add to previous data collected for spheres cylinders and ellipsoids by performing new measurements on cubes, cuboids and cones. The measurement technique and results on mean-square particle rotation will be presented. Preliminary results, at the time of writing this abstract, indicate that symmetry breaking increases the rate of particle rotation. More complete quantitative results will be presented.

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