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Measuring the rotation rate of rod-shaped particles in 3D turbulence SHIMA PARSA, Wesleyan University, NICHOLAS T. OUELLETTE, Yale University, GREG A. VOTH, Wesleyan University — We study the rotation of rod-shaped particles in turbulent flow using stereoscopic particle tracking with high speed video. With images from multiple cameras we are able to extract the position and orientation of rods as a function of time in a flow between oscillating grids. We work in the low density limit where rod-rod interactions can be ignored. Rod rotation is determined by the local velocity gradient so measurement of the rotation rate variance provides an indirect way to access the second moment of velocity gradient of the flow. Development of methods for tracking rods in turbulence shows great promise both for understanding many flows containing inertial rods and as a means of extracting small scale properties of the flow along Lagrangian trajectories

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