

Rotation dynamics of ideal nonspherical particles and extension to field measurements

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Laboratory measurements using manufactured refractive-index matched particles give the full rotation vector for spherical and non-spherical particles. We compare the PDF of angular velocity across particle shape and timescale. To extend this work to field studies in the environment, we have constructed a rugged, field-deployable camera that measures Lagrangian particle paths. To demonstrate the utility of this we present the velocity statistics of living plankton in turbulent flow.