

Abstract Submitted
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Dynamics of light particles in turbulence VARGHESE MATHAI, Univ of Twente, VIVEK PRAKASH, Stanford University, JON BRONS, CHAO SUN, DETLEF LOHSE, Univ of Twente, PHYSICS OF FLUIDS GROUP, UNIV OF TWENTE TEAM — Particle-laden turbulent flows occur widely in nature and industrial applications. The accelerations experienced by these particles can be extreme and intermittent, and are a measure of the forces acting on them. Most of the previous studies have focused on neutrally buoyant and heavy particles in turbulence. In this work, we experimentally study the Lagrangian dynamics of finite-size light particles in a nearly homogeneous and isotropic turbulent channel flow. We explore a range of size ratios and density differences to arrive at the transitional regime when the wake effects start to dominate particle dynamics. Our results suggest that light particle dynamics in turbulence is a strongly two-way coupled problem even for very small density differences with the continuous phase.

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