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Lagrangian statistics of inertial particles in near-wall turbulence JUNGHOON LEE, CHANGHOON LEE, Yonsei University — Despite many studies regarding particle-laden turbulence in near-wall turbulence, detailed investigation on the Lagrangian nature of particles is very rare. In our study, inertial particle trajectories suspended in turbulent channel flow were calculated via direct numerical simulation with Lagrangian particle tracking. Since particles smaller than the Kolmogorov length scale and their dilute suspension are addressed in this study, oneway coupled simulations with point-particle approach are performed. By ensembleaveraging over a number of particles, we investigate Lagrangian statistics, such as particle dispersion, velocity and acceleration autocorrelation and probability density function of expected particle position, of particles released at several different distances from the wall for a wide range of Stokes numbers. In addition, the effects of gravity and lift on the Lagrangian statistics are investigated. Plausible physical explanations are provided.

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