

Abstract Submitted  
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**Influence of gravity on inertial particle clustering in turbulence<sup>1</sup>**

J. LU, H. NORDSIEK, E.W. SAW, J.P. FUGAL, Dept. of Physics, Michigan Technological University, R.A. SHAW — We report results from experiments aimed at studying inertial particles in homogeneous, isotropic turbulence, under the influence of gravitational settling. Conditions are selected to investigate the transition from negligible role of gravity to gravitationally dominated, as is expected to occur in atmospheric clouds. We measure droplet clustering, relative velocities, and the distribution of collision angles in this range. The experiments are carried out in a laboratory chamber with nearly homogeneous, isotropic turbulence. The turbulence is characterized using LDV and 2-frame holographic particle tracking velocimetry. We seed the flow with particles of various Stokes and Froude numbers and use digital holography to obtain 3D particle positions and velocities. From particle positions, we investigate the impact of gravity on inertial clustering through the calculation of the radial distribution function and we compare to computational results and other recent experiments.

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