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Lagrangian statistics of inertial particles in turbulent flow MICKAEL BOURGOIN, NAUMAN QURESHI, CHRISTOPHE BAUDET, ALAIN CARTELLIER, YVES GAGNE, LEGI / CNRS - Grenoble Universites, EDT TEAM — Being able to accurately model and predict the dynamics of dispersed inclusions transported by a turbulent flow, remains a challenge with important scientific, environmental and economical stakes. One critical and difficult point is to correctly describe the turbulent dynamics of particles over a wide range of sizes and densities. We present high resolution acoustical Lagrangian measurements of inertial particles transported in a grid generated turbulent flow. The size of the particles and their density have been systematically varied. Our measurements show that Lagrangian statistics of the dispersed particles do exhibit non tirvial, and so far unpredicted, size and density effects. This has important consequences in terms of modelling of the turbulent transport of dispersed inclusions.

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