

Abstract Submitted  
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**The role of discrete and carrier phase mechanical coupling in the inertial particles settling velocity**<sup>1</sup> DANIEL ODENS MORA, Université Grenoble Alpes, CNRS, Grenoble-INP, LEGI, F-38000, Grenoble, France, and Department of Mechanical Engineering, University of Washington, MARTIN OBLIGADO, Université Grenoble Alpes, CNRS, Grenoble-INP, LEGI, F-38000, Grenoble, France, ALBERTO ALISEDA, Department of Mechanical Engineering, University of Washington, ALAIN CARTELLIER, Université Grenoble Alpes, CNRS, Grenoble-INP, LEGI, F-38000, Grenoble, France — Inertial particles settling velocity plays a non-negligible role in several environmental, and industrial applications, such as, cloud formation and pollutant dispersion. In this study, we have recorded via Laser Doppler Interferometry the vertical and horizontal velocities of sub-kolmogorov particles in a wind tunnel facility. We have explored a wide range of Taylor Reynolds numbers (between 40 and 650) by means of an active (actuated in two different modes), and a classical passive grid. We were able to estimate the turbulence modulation coming from the inertial particles presence with the help of a recent method proposed in the literature. The particle settling velocity data recorded for the different grids tested seems to better collapse when the turbulence modulation by the particles is included into the scalings.

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Daniel Odens Mora  
Université Grenoble Alpes; University of Washington

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