Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Flow around finite-size neutrally buoyant Lagrangian particles in fully developed turbulence[1] MATHIEU GIBERT, SIMON KLEIN, ANTOINE BÉRUT, EBERHARD BODENSCHATZ, Max Planck Institute for Dynamics and Self-Organization — By using an innovating technique based on Lagrangian Particle Tracking (LPT), we have been able to follow the motion of finite-size neutrally buoyant particles together with the trajectories of tracer particles in the surrounding fluid. The particles we study have diameters of about 200 times the dissipative scale of the flow, and their density is almost that of the fluid. The experiments are conduced in a von Karman swirling water flow at Taylor microscale Reynolds numbers up to 500. By measuring the full motion of the big particles (translation and rotation), we are able to "sit" in their frame of reference and measure the flow properties around them. We will report experimental results on the flow properties and its correlations with the big particle trajectories in this Lagrangian frame.

[1]This work was funded by the Max Planck Society, and the Marie Curie Fellowship, Programme PEOPLE - Call FP7-PEOPLE-IEF-2008 Proposal No. 237521.

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Date submitted: 10 Aug 2010 Electronic form version 1.4