

Abstract Submitted  
for the DFD06 Meeting of  
The American Physical Society

**Experimental investigation of particle interaction in Couette flow**<sup>1</sup> MARINA POPOVA, PETER VOROBIEFF, MARC INGBER, The University of New Mexico — We present an experimental investigation of the interaction of two spherical particles in stratified, effectively two-dimensional shear flow inside a Couette cell. The motion is very slow (Reynolds number  $R < 0.1$ ). The experiment is performed with particles of 3 different types of surface texture, to find if particle surface roughness has any effect on the interaction. Particles are initially inserted into the Couette cell close to each other under reliably repeatable initial conditions, and their subsequent motion is driven by the inner rotating cylinder of the cell. In the experiment, this cylinder is repeatedly rotated by the same angle clockwise and counterclockwise, allowing to assess any irreversibility brought upon by the interaction of particles. The collected particle coordinates are analyzed statistically. The experiments provide a benchmark for the analytical and numerical solutions of the general problem of particle interaction in shear flow.

<sup>1</sup>This research is supported by the US DOE grant DE-FG02-05ER25705.

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Date submitted: 04 Aug 2006

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