Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

An Experimental Study of Lagrangian Statistics in Rayleigh-Bénard Convection[1] RUI NI, SHI-DI HUANG, SHENG-QI ZHOU, KE-QING XIA, The Chinese University of Hong Kong — We present an experimental study of Lagrangian statistics in Rayleigh-Bénard convection, using water as the working fluid. The tracking volume is $(5\text{ cm})^3$ in the centre of a cylindrical shaped convection cell of aspect ratio one and 20 cm in height. Three cameras were used to identify the 3-dimensional positions of the tracer particles, which were evenly suspended in the cell. Detailed properties of the particle velocity, acceleration and dispersions along different directions have been investigated. We also studied the dependency of pair dispersion properties on the initial pair separation. All these properties have been examined with Rayleigh number spanning from 10^8 to 10^{10} and Prandtl number around 6.2.

[1]Work supported by the Research Grants Council of Hong Kong SAR (Project Nos. CUHK 403806).

Ke-Qing Xia
The Chinese University of Hong Kong

Date submitted: 05 Aug 2010 Electronic form version 1.4