Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Fully resolved simulations of 2,000 fluidized particles[1] DANIEL WILLEN, ADAM SIERAKOWSKI, ANDREA PROSPERETTI, Johns Hopkins University — Computational capabilities have matured sufficiently to render possible the dynamic simulation of thousands of resolved particles in fluid flows, generating an unprecendented amount of data. In this work we present a simulation of 2,000 fluidized particles generated with the Physalis method, and focus on probing the data with tools from statistical physics. In particular, the study of particle triads and tetrads has been used to study the dispersion of passive scalars in turbulence. Knowledge of the average shape and size of these structures over time provides insight into particle diffusion and the persistence of clusters.

[1]Supported by NSF award No CBET 1335965

Andrea Prosperetti
Johns Hopkins University

Date submitted: 31 Jul 2015 Electronic form version 1.4