Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

A new approach to Lagrangian investigations of isotropic turbulence[1] MANUEL BARJONA, CARLOS B. DA SILVA, Inst Superior Tecnico (IST), IDMEC TEAM — A new numerical approach is used in conjunction with direct numerical simulations (DNS) of statistically stationary (forced) isotropic turbulence to investigate the high Reynolds number scaling properties of turbulence characteristics in a Lagrangian frame. The new method provides an alternative route to the determination of the classical Lagrangian turbulence quantities, such as the second order Lagrangian velocity structure function and two point particle separation, at a much higher Reynolds number than as obtained in previous numerical simulations, and displays excellent agreement with the classical theoretical predictions and existing numerical simulations and experimental data.

[1]The authors acknowledge the Laboratory for Advanced Computing at University of Coimbra for providing HPC, computing, consulting resources that have contributed to the research results reported within this paper. URL http://www.lca.uc.pt

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Date submitted: 21 Jul 2016 Electronic form version 1.4