

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**Secondary flow and particle transport in a square duct** HOORA ABDEHKAKHA, GIANLUCA IACCARINO, Stanford University — Particle transport and deposition play a significant role in various industrial applications. Previous studies have shown that high magnitudes of the vorticity near the corners of a duct can cause higher accumulation of the particles close to the wall. The objective of this study is to investigate the effects of the secondary flows in the transport and deposition of particles in a turbulent square duct flow. In order to enhance our understanding of particle deposition, we performed three-dimensional direct numerical simulation of a square duct in low Mach number turbulent flow using a Lagrangian model for prediction of particle transport and deposition. To have a more comprehensive understanding of the effects of turbulent flow on particle deposition, simulations with different Reynolds numbers and particle Stokes numbers are performed.

Hoorah Abdehkakha  
Stanford University

Date submitted: 01 Aug 2014

Electronic form version 1.4