

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**Relative velocities in bidisperse turbulent suspensions**<sup>1</sup> JAN MEI-BOHM, Gothenburg University — We investigate the distribution of relative velocities between small heavy particles of different Stokes numbers in turbulence by analysing a statistical model for turbulent suspensions of particles with two different Stokes numbers. When the Stokes numbers are similar, the distribution exhibits power-law tails, just as in the case of equal Stokes numbers. We show that the power-law exponent is a non-analytic function of the mean  $\overline{St}$  of the two Stokes numbers. This means that the exponent cannot be calculated in perturbation theory around the advective limit. When the difference between the Stokes numbers is larger, the power law disappears, but the tails of the distribution still dominate the relative-velocity moments, if  $\overline{St}$  is large enough.

<sup>1</sup>'Bottlenecks for particle growth in turbulent aerosols', Knut and Alice Wallenberg Foundation, Dnr. KAW 2014.0048

Jan Meibohm  
Gothenburg University

Date submitted: 02 Aug 2017

Electronic form version 1.4