

Abstract Submitted  
for the DFD08 Meeting of  
The American Physical Society

**Translational and Rotational Velocity Statistics in a Rotating Granular Tumbler** JACOB JANTZI, JEFFREY OLAFSEN, Department of Physics, Baylor University — Several hundred stainless steel cylinders in a rotating tumbler were used to examine translational and rotational velocity statistics within a granular flow of only a few layers. The particles at the boundary are strongly influenced by the shear of the wall and act as a lubrication layer between the boundary and the bulk flow. The particles in the bulk flow do not appear to have any mean rotational velocity about their axes, and instead “chatter,” fluctuating back and forth without bias. Inertial effects due to the particle layers were observed as well, with the rotational velocities of the boundary layer dependent on the height of the bulk above it. Both the translational and rotational velocity distributions in the flow were examined for deviations from Gaussian. This analysis was accomplished using a newly developed stereoscopic CCD camera array.

Jeffrey Olafsen  
Department of Physics Baylor University

Date submitted: 30 Jul 2008

Electronic form version 1.4