

Abstract Submitted  
for the DFD12 Meeting of  
The American Physical Society

**Experimental study of the boundary layer properties in ultimate Taylor-Couette flow** SANDER HUISMAN, ROELAND VAN DER VEEN, CHAO SUN, DETLEF LOHSE, Physics of Fluids group, University of Twente, Netherlands — We report high-resolution measurements of the properties of the velocity boundary layer in turbulent Taylor-Couette flow using time-resolved particle image velocimetry (PIV). The experiments are performed in the Twente Turbulent Taylor-Couette facility (T3C). The Taylor number is varied from  $10^8$  to  $10^{13}$ , which covers the ultimate turbulence regime and the transition regime. We also change the rotation ratio of the inner and outer cylinders. The boundary layer profile, thickness, and scaling behavior are experimentally examined. In addition, the measured results are closely compared to the boundary layer properties in turbulent Rayleigh-Bénard flow.

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Date submitted: 20 Jul 2012

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