

Abstract Submitted
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Velocity profile measurements in high Reynolds number Taylor-Couette flow for pure outer-cylinder rotation SANDER HUISMAN, DENNIS VAN GILS, CHAO SUN, Physics of Fluids group, University of Twente, GERTJAN VAN HEIJST, Turbulence and Vortex Dynamics, Technical University of Eindhoven, DETLEF LOHSE, Physics of Fluids group, University of Twente — Using Laser Doppler Anemometry, we measured azimuthal and axial velocity profiles inside the gap of a Taylor-Couette apparatus, spinning only the outer cylinder at a varying Reynolds number from 1.4×10^5 to 1.4×10^6 . The system has a radius ratio of 0.716 and an aspect ratio of 11.68, and the end plates are attached to the outer cylinder. The azimuthal profiles were found to be notably different from the laminar velocity profile due to the influence of the end plates. We analyzed the end effects by studying the Ekman and Stewartson boundary layer dynamics in Taylor-Couette flow.

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