

Abstract Submitted
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Identification and analysis of boundary layer structures in Tomographic PIV data¹ CECILIA ORTIZ-DUENAS, NEELAKANTAN SAIKRISHNAN, ELLEN LONGMIRE, Aerospace Engineering and Mechanics, University of Minnesota — Tomographic particle image velocimetry data were acquired in a turbulent boundary layer flow generated in a wind tunnel facility. The friction Reynolds number Re_τ was 1160. Measurement volumes of streamwise and spanwise dimension 0.7δ and wall normal thickness 0.07δ , which resolved the range $z^+ = 70-150$, were analyzed using custom software. Various criteria, including streamwise velocity, two- and three-dimensional swirl, individual vorticity components, and Reynolds shear stress, in combination with region growing and coincidence algorithms, were employed to identify and characterize coherent structures present in instantaneous fields. The results of the present study will be described and also compared with results from earlier experiments by Ganapathisubramani et al., 2003, 2006, that relied on planar PIV data only.

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