

Abstract Submitted
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Mean Flow Measurements with Pitot Probes in High Reynolds Number Boundary Layers S. BAILEY, M. HULTMARK, R. DUNCAN, B. MCKEON, AND ICET TEAM — Mean velocity profiles were measured in zero-pressure-gradient turbulent boundary layers using a variety of Pitot probes in three facilities at five different Reynolds numbers. The results were analyzed to verify the Reynolds number similarity between the two facilities and the scaling of the integral parameters was found to be consistent with the results from other studies. A linear relationship was found between Re_θ and Re_τ and used to determine a new friction factor relationship based on momentum thickness. Different methods used to determine the von Kármán constant were compared. When the friction velocity was determined using the new relationship, a logarithmic region between $y^+ = 300$ and $y/\delta = 0.1$ was observed for $Re_\theta > 15000$. A von Kármán constant of 0.40 was found for this region.

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