

Abstract Submitted  
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**A New Scaling for Adverse Pressure Gradient Turbulent Boundary Layers**<sup>1</sup> FLINT THOMAS, University of Notre Dame, DAVID SCHATZMAN, NASA Ames Research Center — A new scaling for strong adverse pressure gradient (APG) turbulent boundary layers (TBL) is presented. The new scaling is applied to data from the author's APG TBL experiment as well as several previous experimental studies. Both steady and unsteady flows are considered. The new scaling is shown to provide an excellent collapse of not only the mean velocity but also the turbulent stress profiles. The physical motivation for the scaling is presented in terms of underlying stability mechanisms as evidenced by a series of conditional boundary layer measurements. The implications of the scaling on the physics of strong APG TBL flows is also discussed.

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