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**PIV Measurements of Turbulence in a Hypersonic Boundary Layer** DIPANKAR SAHOO, MIKE PAPAGEORGE, ALEXANDER SMITS, Princeton University — Previous experiments on hypersonic turbulent boundary layers have documented the general features of the mean flow behavior, but virtually no high quality data exist describing the turbulence behavior for Mach numbers greater than about 5. To help improve our understanding of high Mach number wall-bounded turbulence, we perform PIV measurements of two components of velocity fluctuations in a flat plate, turbulent boundary layer at Mach 8 in a perfect gas, at a Reynolds number based on momentum thickness of about 4000. The results are compared with DNS under identical flow conditions. Supported under NASA Grant NNX08AB46A, Program Manager Catherine McGinley.

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