

Abstract Submitted  
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**Non-intrusive measurements in hypersonic shock wave turbulent boundary layer interactions**<sup>1</sup> ANNE-MARIE SCHREYER, Institute for Aerodynamics and Gas Dynamics, University of Stuttgart, 70569 Stuttgart, Germany, DIPANKAR SAHOO, ALEXANDER J. SMITS, Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ 08544 — Measurements are presented to describe the behavior of a shock wave turbulent boundary layer at hypersonic speed. Mean flow and two components of velocity fluctuations are obtained using PIV, and flow visualization and thermal imaging are performed using schlieren and infrared imaging, respectively. The boundary layer develops at Mach 7.2 in a perfect gas, at a Reynolds number based on momentum thickness between 3600 and 5500. The shock waves are created using two-dimensional compression corners of 8° and 33°. The flow field is attached for the 8° corner, and separated for the 33° corner. The modification of the flow field due to micro-ramps placed upstream of the 33° corner is also discussed.

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