

Abstract Submitted
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Characterization of the Shear Layer in a Mach 3 Shock/Turbulent Boundary Layer Interaction CLARA HELM, University of Maryland, College Park, STEPHAN PRIEBE, Princeton University, PIERRE DUPONT, Groupe Supersonique, IUSTI, UMR CNRS 6595 and Aix-Marseille Univ., Marseille, France, PINO MARTIN, University of Maryland, College Park — A detailed characterization of the shear layer in a direct numerical simulation of a Mach 3 shock/turbulent boundary layer interaction for a 24° ramp is presented. The behaviour of the shear layer as a plane mixing layer will be demonstrated through similarity profiles of the mean velocity and Reynolds stresses. The existence of large scale coherent eddies associated with the Kelvin-Helmholtz structures characteristic of plane mixing layers is investigated. An estimation of the time and length scales associated with these eddies is conducted. Also presented is evidence of the modulation of the fluctuating intensities in the shear layer by the low-frequency motion of the shock. This work is supported by the Air Force Office of Scientific Research under grant AF/9550-10-1-0164.

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