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**Characterization of the transition of separated shear layers on 2D rectangular prisms** DANIEL MOORE, CHRIS LETCHFORD, MICHAEL AMITAY, Rensselaer Polytech Inst — The flow field associated with a rectangular 2D prism, having aspect ratios from 1 to 5, was investigated experimentally using two dimensional Particle Image Velocimetry (2D-PIV), surface-mounted microphones and hot-wire anemometry. Specifically, the shear layer separating from the sharp-edged section, which originates from a laminar boundary layer along the windward face, was explored. Downstream of the sharp edge, the shear layer quickly experiences instabilities of the Kelvin-Helmholtz type that contribute directly to the transition process. The characterization of the flow field was evaluated using frequency analysis and the dominating terms (obtained from the PIV data) in the turbulent kinetic energy transport equation. Evaluating the spatial gradients reveals the locations and magnitudes of maximum turbulence production, advection, diffusion and dissipation within the shear layer. The effect of the prism's aspect ratio on the evolution of the shear layer will also be discussed in the presentation.

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