Abstract Submitted
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Vorticity Based Properties of the Viscous Superlayer (VSL) for a Large Single Stream Shear Layer (SSSL)[1] JOHN FOSS, AREN HELLUM, Michigan State University — The MSU four-sensor transverse vorticity probe has been used to establish the intermittency function: I=1 if vorticity (ω_z) is present, I=0 if it is not for a high R_e SSSL, $U_o\theta/\nu$=9.6×10^4. The rationale for the dwell time and amplitude threshold will be demonstrated. (The dwell time is set as kλ_t for k=2 and λ_t= Taylor time microscale of the transverse velocity fluctuation. The amplitude threshold was selected as 40 sec^{-1}). Using these processing conditions, the present (averaged) <I(η) > values can be compared with the similar distribution (albeit derived from a surrogate signal) from Wyganski and Fiedler (1970). The two distributions are in close agreement if the mean velocity profiles are forced to agree. Pattern recognition software tools will also be used on the ω_z(t) data to evaluate I(t). A planar array of 6 probes: x/θ(o)=500, 0≤ η ≤3.05 for η=(y-y$_c$)/θ, will be used to track the I=0,1 transitions that signal the passage of the VSL. The inferred topological features of the VSL will be presented. Wyganski, I. and H.E. Fiedler (1970) "The two-dimensional mixing region," *J. Fluid Mech.*, **41**, 327-361.

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