

Abstract Submitted
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Comparing DNS and Experiments of Subcritical Flow Past an Isolated Surface Roughness Element¹ CHARLES DOOLITTLE, DAVID GOLDSTEIN, University of Texas at Austin — Results are presented from computational and experimental studies of subcritical roughness within a Blasius boundary layer. This work stems from discrepancies presented by Stephani and Goldstein (AIAA Paper 2009-585) where DNS results did not agree with hot-wire measurements. The near wake regions of cylindrical surface roughness elements corresponding to roughness-based Reynolds numbers Re_k of about 202 are of specific concern. Laser-Doppler anemometry and flow visualization in water, as well as the same spectral DNS code used by Stephani and Goldstein are used to obtain both quantitative and qualitative comparisons with previous results. Conclusions regarding previous studies will be presented alongside discussion of current work including grid resolution studies and an examination of vorticity dynamics.

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