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Entropy generation in a transitioning boundary layer EDMOND J. WALSH, DONALD M. MCELIGOT, BRIAN EGAN, U. Limerick, Eire, LUCA BRANDT, PHILIPP SCHLATTER, DAN S. HENNINGSON, KTH, Stockholm —
Insight into entropy generation is a key to increasing efficiency. For viscous wall layers, it is reasonably understood and predictable for laminar and developed turbulent flows. However, results apparently are not yet available for the pointwise entropy generation rate for transitional boundary layers, even for zero pressure gradients, except with an approximate treatment. The present study applies the numerical simulations of Brandt et al. [JFM 2004] to address this deficiency. Predicted spatial distributions are presented for an initial Reynolds number (Uinf,in x delta,star,in/nu) of 300, a length scale (L/delta,star,in) of five and a moderate turbulence level of 4.7 per cent; they are compared to approximate predictions/measurements.

Donald M. McEligot

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