

Turbulent Boundary Layer Flow over S-Shaped Surface With Side Wall Parallel to the Stream

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Abstract

Turbulent boundary layers over s-shaped surface attached to a vertical side wall were experimentally investigated. Measurements were performed over the s-shaped surface at three distinctive regions; the neighborhood of the corner; a distance approximately equal the thickness of the mixed boundary layer, and far distance from the side wall. The effect of attaching the sidewall to the s-shaped surface is striking, as it prevents the flow along the corner from separation in adverse gradients. The mixed boundary layer flow in the corner increases the skin friction coefficient. Beyond the reattachment of the free boundary layer, at far distance from the corner, the turbulent structure has become strongly disturbed by the prior separation and hence thickened the boundary layer.