Abstract Submitted
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An Experimental Study of Flow Separation over a Flat Plate with Transverse Grooves[1] EMILY JONES, AMY LANG, The University of Alabama — A shark's scales help to reduce drag over its body by controlling boundary layer separation over its skin. It is theorized that the scales bristle when encountering a reversing flow, thereby trapping vortices between the scales, creating a partial slip condition over the surface and inducing turbulence augmentation in the boundary layer. In an attempt to replicate and study these effects, a spinning cylinder was used in a water tunnel to induce separation over a flat plate with 2 mm, square 2-D transverse grooves and sinusoidal grooves of the same size. The results were compared to tripped, turbulent boundary layer separation occurring over a flat plate without grooves using DPIV. The strength of the adverse pressure gradient was varied, and the observed delay in flow separation and other effects upon the boundary layer are discussed.

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