

Abstract Submitted
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Drag-Reduction Effectiveness of Riblet Films in Adverse Pressure Gradients¹ AARON BOOMSMA, FOTIS SOTIROPOULOS, University of Minnesota — Riblet films are micro-grooved structures that are widely known to passively reduce skin friction. Past studies have almost solely focused on riblet performance in channel-flows. However, possible applications of riblets include wind turbine blades, gas turbine blades, and other complex bodies that are exposed to non-zero pressure gradient flows—specifically adverse pressure gradients. We use high-resolution large eddy simulations of turbulent flow over three-dimensional riblets under an adverse pressure gradient. We analyze the computed results to quantify drag reduction effectiveness for different riblet shapes and to examine pertinent turbulent structures to gain a fundamental understanding of riblet performance.

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