

Abstract Submitted
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The Drag of 2D Single-Roughness Elements Immersed in Turbulent Boundary Layers¹ BOON TUAN TEE, TIMOTHY NICKELS, University of Cambridge — Most of drag studies on flow behind single protuberances in laminar boundary layers focusing mainly with transition, with few studies as regards to turbulent boundary layers. The primary aim of this work was to determine the drag of these protuberances since they exist in practical flows. The experiment was conducted in the turbulence water tunnel research facility at Cambridge University Engineering Department. Measurements were taken using 2D-PIV on 3 types of rough wall configuration involving 2D rough bar with the triangular, circular and semi-circular shapes. The total drag for these 3 types of single protuberances was calculated by considering the undisturbed boundary layer upstream and downstream of the boundary layer. The result reveals that the drag is dependent on the area facing the flow with the triangular shape creating the most drag and the semi-circular the least drag.

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