Supersonic flow over a Double-Wedge Airfoil

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Abstract

This case study aims to understand the flow domain over a double-wedge airfoil at 0, 2, 4, 6, 8, 10, 12, 14 and 16 angles of attack. The primary objective of this study is to identify the shock waves and expansion fans. In addition, it also aims to obtain a plot of Lift to Drag ratio and angle of attack. The geometry used is similar to the experimental setup used by Tellez et al [1] and a schematic of the same is provided in this document.

The solver used is the sonicFoam solver. In addition, the turbulence is modeled using the k - ε model.

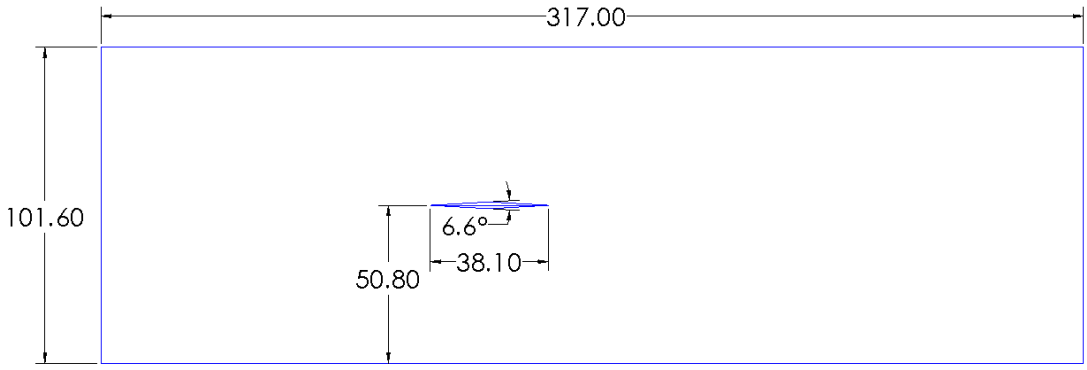

Figure 1: Schematic of the Computational Domain

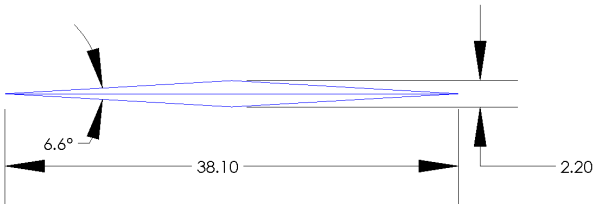

Figure 2: Schematic of the Computational Domain

References

[1] Tellez, J.L.G., Hernandez-Martinez, E., Velazquez, M.T., Herrera, J.A.O. and Quinto-Diez, P. (2016). *Evaluating Oblique Shock Waves Characteristics on a Double-Wedge Airfoil*. Engineering, 8, 862-871.