

Numerical Solution of Laminar Flow over Symmetric NACA Airfoils

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Abstract - Solving the Boundary Layer Equations is a challenge, even more so for complex geometries. This requires resolution of the drag inducing layer immediately adjacent to the solid surface, which is numerically and computationally intensive. Finite Difference schemes, though accurate, are better suited for rectilinear grids. The present work applies a unique approximation to solve the Boundary Layer Equations over a curved airfoil, approximating the geometry by linear splines, and sequentially applying the inclined flat plate solution over each individual section. The lift coefficient thus obtained for a NACA 0005 airfoil is compared with established values, for different angles of attack.

Keywords: Boundary Layers, Symmetric NACA Airfoils, Finite Difference Methods.