

## **Estimation of Lift Hysteresis of an Airfoil in Low Speed Flow**

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A phenomenon called hysteresis leads to a difference in separation and reattachment angles of an airfoil at angles of attack near and above stall. This occurs when there is a difference in the lift distribution of an airfoil than expected for a given angle of attack when recovering from a stall. This leads to asymmetric flow parameters around a body even when the boundaries remain symmetric. Empirical results for lift and pressure coefficients were obtained for a two-dimensional Clark Y-14 at low speeds. The lift characteristics of the airfoil were observed while varying angle of attack and Reynold's number. It was seen that the extent of the lift hysteresis largely depends on Reynold's number. Further experiments and Computational Fluid Dynamics (CFD) simulations will be conducted in order to determine the relationship of the effective body of the stalled airfoil and the presence of hysteresis loops.

**Keywords:** *coefficient of pressure, lift hysteresis, lift curve, flow separation, stall*