Aerodynamic characteristics of Subsonic missile

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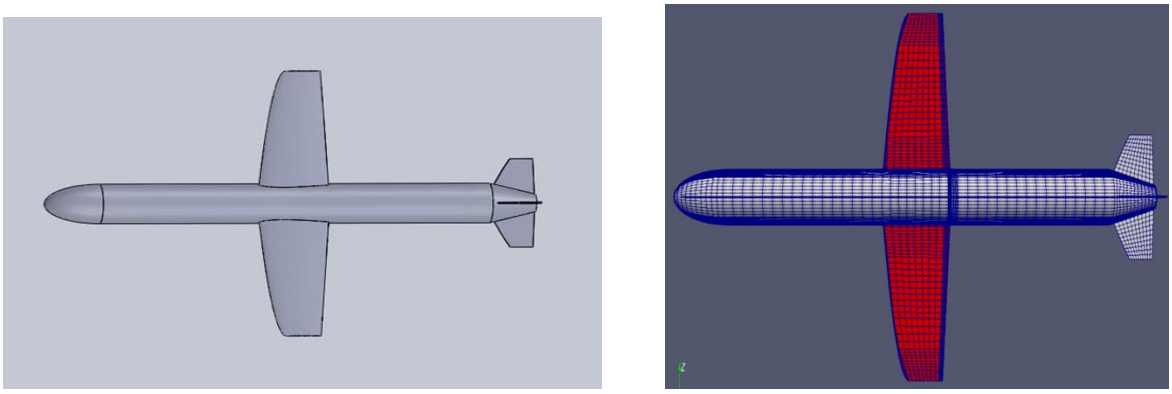
Abstract

The present study describes the aerodynamics characteristic such as lift and drag coefficient on a subsonic missile. The 2D subsonic missile is modeled with solidworks, mesh is carried out using Ansys and solved using simplfoam solver in Openfoam, to visualize velocity and pressure distribution. The drag and lift coefficient is calculated for different angle of attack in the flow regime. The plot is made between angle of attack and lift coefficient to visualize the flow separation regime. For 3D case geometry and meshing is carried out with the help of a commercial solver ICEM Cfd Workbench. Both 2D and 3D simulations are performed with the steady state solver in OpenFOAM v7.

Problem Statement

1) To visualize pressure and velocity distribution of subsonic missile at different angle of attack

2) To capture lift and drag coefficients for different angle of attack



(a) (b)

Fig: (a) and (b) shows the 2D modelled geometry and 3D meshed subsonic missile configuration