

Project Description:

Large Eddy Simulation of Heat Transfer on Wing Surfaces in 3D

Large Eddy Simulation, a subdomain of Computational Fluid Dynamics, is recently experiencing an increased attention, due to increasing capabilities of the necessary hardware, in detail CPU and memory.

In most sectors it is not yet industrial standard, because of its high demand in terms of resources, but it will become an important tool for investigation of complex flow problems in near future.

Therefore the aim of the Bachelor project is the execution of a high-resolution simulation of the heat transfer on a wing surface in three dimensions. The given geometry for this task is a NACA 0012 airfoil and the software used will be Ansys ICEM and Ansys CFX. Subsequent the achieved results shall be compared to results obtained from RANS-simulations, which are nowadays standard for industrial application.

Due to the complexity of the Large Eddy Simulation a majority of the work will be studying the theoretical basics as well as performing LES in practice in order to achieve the necessary skills.