

# Master thesis

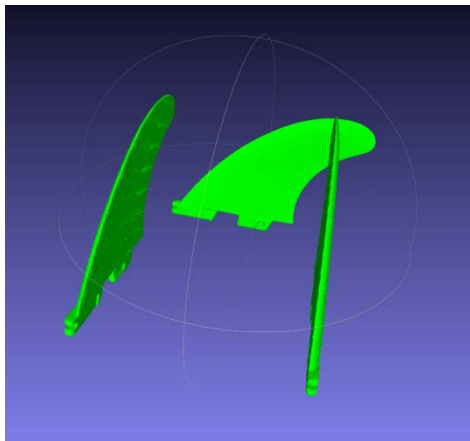
## To students at the Technical Faculty

(Computational engineering, Medical Engineering, Maschinenbau)



### **Title: CFD simulation: Influence of surfboard fin size on drag and lift forces**

Although surfing (Wellenreiten) is widespread around the world, surfboard design is still a trial and error process, since only rudimentary studies on the fluid dynamical characteristics of surfboard and fin shape have been performed.



In this project, we want to study the fluid dynamics for surfboard-fins with varying sizes and the influence towards resulting drag and lift forces for different angles of fluid attack and fluid velocities. The **question to answer is: Does fin size really have significant influence on forces and if yes where do they affect most forces?**

The CFD model will be implanted in STAR-CCM+ using nonstationary fluid dynamics. It is assumed that the surfboard is on a flat water surface – the water does have a predefined and constant flow velocity. As fin-models, CAD models for the different sizes will be used.

The work will be supervised by **Prof. Dr.-Ing. Michael Döllinger** and **PD. Dr. Stefan Kniesburges**.

#### **We search for a dedicated and motivated student** with

- experience in CFD modeling and simulation
- knowledge and experience in scientific programming in the field of fluid dynamics

#### **Tasks:**

- Enhancement of the existing CFD model in STAR-CCM+
- Numerical parameter study on different fin sizes and effect on the fluid

#### **Contact persons:**

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