

## HiWi position

### Numerical simulation of droplet impact on structured surfaces

Institute of Aerospace Thermodynamics, University of Stuttgart.

The interaction of droplets with a solid surface has been a topic of great interest in the diverse area of science and technology such as aerospace, electronics, energy and materials. In recent years, a tremendous increased interest has developed on micro-structured surfaces. Most of these studies are carried out as experimental investigations. In contrast, there is still only a limited number of numerical works, which has been done to understand the fundamental physical mechanisms taking place for a drop impact on such surfaces. However, continuously increasing computer capabilities make it now possible to analyse drop impacts on textured surfaces in great detail by using Direct Numerical Simulations (DNS) for multi-phase flows. Thus, this project aims to numerically study in detail drop impact and wetting behaviour on textured surfaces (shown in figure 1). The simulation tool used is the DNS code Free Surface 3D (FS3D) (Eisenschmidt et al. 2016).

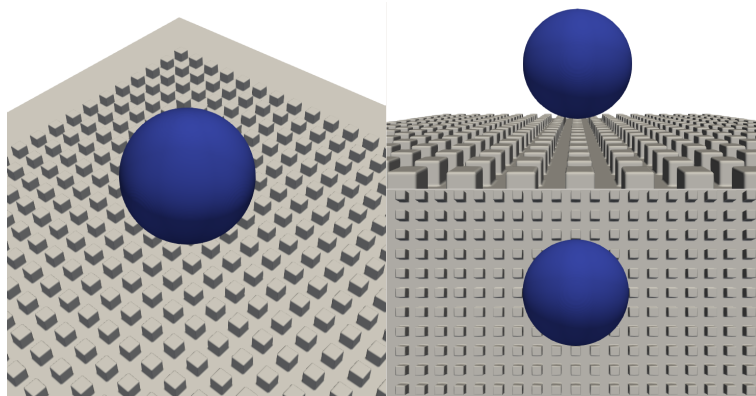


Figure 1: Droplet impact on cubical micro-structured surfaces.

#### Qualifications:

- Currently enrolled as a student pursuing a Master's degree in Mechanical Engineering, Aerospace Engineering, Physics, or a related field.
- Strong interest and experience in CFD and numerical modeling.
- Basic knowledge in any programming language (e.g., Fortran, MATLAB) is a plus.
- Experience in working with Linux-based computers is a plus.

This Hiwi position has the possibility of transitioning into a Master's thesis. Interested candidates should submit their CV and academic transcripts to Mr. Saha ([rishav.saha@itlr.uni-stuttgart.de](mailto:rishav.saha@itlr.uni-stuttgart.de)).

#### References

Eisenschmidt, Kathrin et al. (2016). "Direct numerical simulations for multiphase flows: An overview of the multiphase code FS3D". In: *Applied Mathematics and Computation* 272, pp. 508–517.