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Unser Zeichen:
KWT 9

Topic for master's thesis

Simulation of droplet formation from hanging film flows with a Volume of Fluid CFD Method

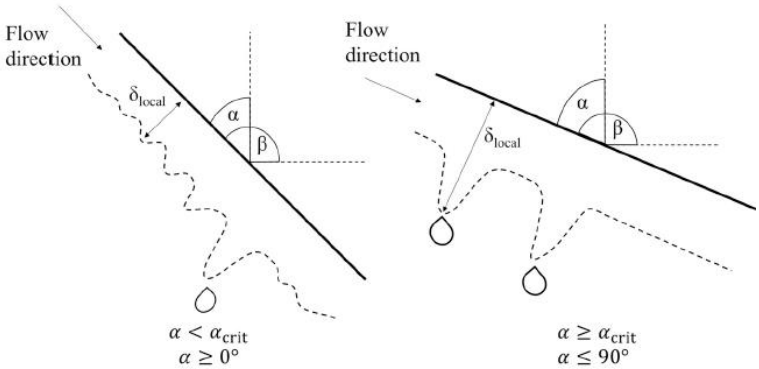
The formation of droplets detaching from a closed, hanging film flow is still not fundamentally understood. Especially, the influence of structured surfaces on the droplet formation is object of ongoing research.
In this master thesis, a geometric Volume of Fluid Method shall be applied to investigate the droplet formation in such arrangements. Simulations need to be prepared (pre-processed, including mesh generation), carried out and analyzed (post-processed). It is planned to use the open source toolbox openFOAM for the given task.

Task description:

- Literature research about droplet formation in VoF
- Mesh generation
- Simulations / numerical experiments
- Analysis of results
- Comparison to experimental data

Desirable skills:

- Knowledge about simulation, specifically CFD
- Programming
- Fluid dynamics, Transport phenomena



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Relevant literature:
https://doi.org/10.1016/j.cherd.2023.06.052
https://doi.org/10.1016/j.compfluid.2020.104722