

# Software Lab

## Main Objective:

CFD simulations of propellers in bow thrusters are an important tool to minimize emissions of sound and vibration caused by cavitation. Meaningful visualizations of unsteady results are critical to understanding the governing processes and communicating them to a broader audience. ParaView's automation capabilities via Python scripts are an effective tool for creating animation series.

\* OpenFOAM simulation results will be provided from the project LeiQaS.

\* Please use the software Paraview and its compatibility with python to create and automate the animations.

Task	Estimated duration
Familiarization with vortex visualization using the Q-criterion and cavitation visualization in multiphase modeling.	2 Week
Learning how to use ParaView and how to automate ParaView workflows using Python.	
Production of one animation of vortex structures.	3 Week
Production of one animation of cavitation.	1 Week
Preparation of python code for automation.	3 Week
Application to 8 additional simulation results to generate 18 additional animation (9 for cavitation, 9 for vortex structures).	2 Week
Writing of the Final Report.	3 Weeks
	Summation: 14 Weeks

## Meeting Schedule:

Weekly Meeting with Ole Richter:

Day: Every Tuesday, Time: 16:00, Location: Room 104

Progress Report Meetings with Prof. Kornev:

Frequency: Twice every month, Starting: 06/2024

## Contact information:

Prof Nikolai Kornev:

Raum:I / 0

Telefon:+49 381 498 9550

[nikolai.kornev@uni-rostock.de](mailto:nikolai.kornev@uni-rostock.de)

Ole Richter:

Room:I / 104

Tel:+49 381 498 9554

[ole.richter@uni-rostock.de](mailto:ole.richter@uni-rostock.de)