

Announcement for the summer semester 2024:

Computational Fluid Dynamics and Simulation Lab

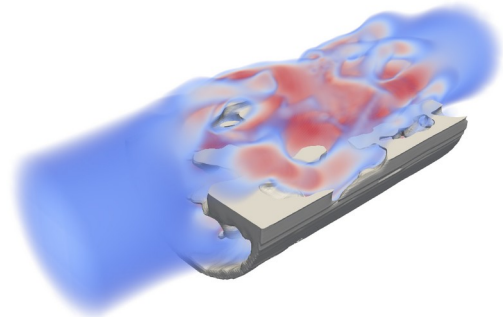
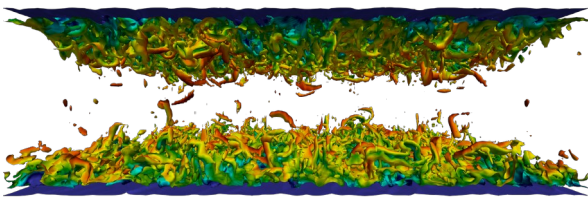
Shota Ito,
Dr. Stephan Simonis
PD Dr. Mathias J. Krause
PD Dr. Gudrun Thäter

This interdisciplinary practical course focuses on applications of mathematics for fluid dynamics in general. Within this context, the essential and interlocking concepts of

- **mathematical modeling**,
- **numerical simulation** (with lattice Boltzmann methods),
- **high performance computing** and
- **presentation and evaluation** of results

are taught with the help of examples.

Under guidance, a fluid dynamics problem is formulated, simulated and hence evaluated with the help of the computational results. Therefore, the C++ software library *OpenLB* (www.openlb.net) is provided and its usage on high performance computers is offered.



The projects are carried out in small groups of two or three students. Each group is supervised by a doctoral student. At the end of the project phase, a written report has to be submitted. Further, each group gives a short presentation to highlight specific results obtained during the course.

Own project topics suggested by the participating students are welcome.

Compulsory attendance holds for the first two dates on **April 16 and 19, 2024** and for the **project presentations in July 2024**.

Start:	Tuesday, April 16, 2024
Dates:	Tuesdays and Fridays, 9:45–11:15am, build. 20.30, -1.031 [in presence]
Examination:	Exercise sheets, project report, and project presentation
Credits:	4 ECTS (<i>upon agreement</i> : exercise course, seminar or laboratory)

The lab has an introductory character and requires solely basic prior knowledge in one of the following programming languages: C, Fortran, C++. Especially students of Masters courses in mathematics and chemical engineering are addressed. The lab can serve as thesis preparation.

Preregistration is mandatory. The maximum number of participants is 30!

For registration or questions, please send an email to stephan.simonis@kit.edu.

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