Announcement for the summer semester 2021

Project-oriented software tutorial

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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. Therefor, the C++ software library OpenLB ([www.openlb.net](http://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 documentation has to be handed in. Further, each group gives a short presentation to highlight specific results obtained during the course.

Suggested project topics by the participating students are welcome.

**Compulsory attendance** holds for the first two dates on April 13 and 16, 2021 as well as for the project presentations in July.

**Start:** Tuesday, April 13, 2021  
**Dates:** Tuesdays and Fridays, 9:45–11:15 am, building 20.30, room -1.031  
**Examination:** Exercise sheets, project report, and project presentation  
**Credits:** 4 ECTS (upon agreement: exercise course, seminar or laboratory)

The laboratory 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.

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

For registration, or in case you have any questions, please send an email to stephan.simonis@kit.edu.