

**Package 1 (lecture) includes**

Registration, full board hotel accommodation (5<sup>th</sup> - 8<sup>th</sup> March), social excursion, lectures, printed lecture notes, certificate of participation, poster session and airport-hotel transfers.

Fee: 300€

**Package 2 (lecture + computing lab) includes**

Package 1 and additional full board hotel accommodation (8<sup>th</sup> - 10<sup>th</sup> March), coffee breaks, computing lab and software examples.

Limited to 30 participants, Fee: 400€

**Important dates**

Application deadline by 23.12.2016

Confirmation by 15.02.2017

**Grants**

Limited financial support is available to cover travel costs partially and conference fees for students.

Send a letter of motivation (1 page) by the 23.12.2016 to [springschool2017@openlb.net](mailto:springschool2017@openlb.net)

**Poster session award**

The award is aiming at supporting excellent students working in the field of LBM.

**More information**

Web: [www.openlb.net/spring-school-2017](http://www.openlb.net/spring-school-2017)

Email: [springschool2017@openlb.net](mailto:springschool2017@openlb.net)

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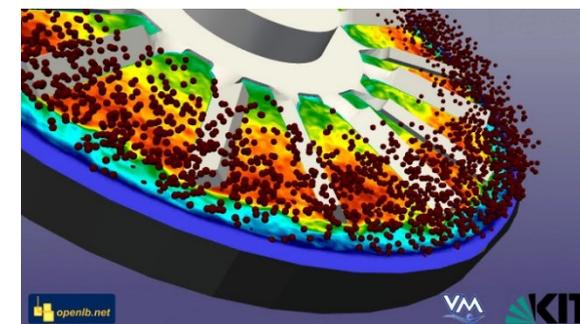
Spring School:

**Lattice Boltzmann Methods**

with *OpenLB* Software Lab

06.-10. March 2017

Hammamet, Tunisia



[www.openlb.net/spring-school-2017](http://www.openlb.net/spring-school-2017)

**Executive committee (TUNISIA)**

Mahdi Tekitek

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**Executive committee (GERMANY)**

Mathias J. Krause

Albert Mink

**Host organizations**

Karlsruhe Institute of Technology

Université de Tunis El Manar

OpenLB

### The field of Lattice Boltzmann Methods

In recent years, Lattice Boltzmann Methods (LBM) turned into an established numerical tool for computational fluid dynamic (CFD) problems and beyond. The simulation of complex multi-physical problems benefits strongly from the comprehensive mesoscopic modelling underlying LBM and establishes LBM besides traditional numerical methods.

The rapid development in LBM - also driven by the emergence of massive parallel computer infrastructure - enables engineers to solve relevant problems for academia as well as for industry.

#### Target audience

The expected attendees are Master and PhD students as well as researchers and developers from academia and industry, who seek to learn both, theoretical and practical aspects of LBM. As simulation is an interdisciplinary discipline, the spring school addresses to engineers, computer scientists, mathematicians, physicians and others. Based on their interest in CFD, this course provides a collaborative platform for LBM for developers and researchers.

#### Objective of the spring school

The spring school introduces scientists and applicants from industry to the theory of LBM and trains them on practical problems. The first three days are dedicated to the theoretical fundamentals of LBM up to ongoing research on selected topics. Followed by two days of mentored training on case studies using *OpenLB*, the participants gain deep inside into LBM and its applications.

This educational concept is probably unique in the LBM community and offers a comprehensive and personal guided approach to LBM. Participants also benefit from the knowledge exchange during poster session, coffee breaks and the excursion at the Mediterranean sea.

### Topic overview and preliminary agenda

#### MONDAY, 06.03.2017

Morning	Hand over spring school documents, Introduction, LBM applications
Afternoon	Mesosopic modeling: from micro to macro scale, LBM introduction, Chapman-Enskog expansion, target equations
Evening	Poster session

#### TUESDAY, 07.03.2017

Morning	LBM for radiative transport, LBM for particulate flows
Afternoon	Boundary conditions, optimal fluid flow control with adjoint LBM, LBM for medical application
Evening	Spring school dinner and poster awards

#### WEDNESDAY, 08.03.2017

Morning	Turbulence models, Efficient parallel implementation
Afternoon	Excursion

#### THURSDAY, 09.03.2017

Morning	Introduction <i>OpenLB</i> , pre- and post-processing, parallel execution
Afternoon	Exercise I

#### FRIDAY, 10.03.2017

Morning	Exercise II, Exercise III
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### Lab room and requirements

In the computing lab sessions on Thursday and Friday, the participants are trained on practical applications, deploying the open source software *OpenLB*. Particular focus is placed on case studies, which are important to understand and verify the theory presented in the lectures, earlier in the spring school. By the help of experienced tutors, the computing lab sessions also enable to set up *OpenLB* simulations for relevant problems. To guaranty personal tutoring and intensive exchange between experienced mentors and novices, the lab is limited to 30 participants.

The attendees are responsible to bring their own laptop equipped with the software

- GNU c++ compiler 4.8 and higher
- OpenMPI 1.6 and higher
- Paraview

### Speakers

François Dubois, CNAM Paris, Université Paris-Sud, France  
 Mathias J. Krause, Karlsruhe Institute of Technology, Germany  
 Marie-Luise Maier, Karlsruhe Institute of Technology, Germany  
 Albert Mink, Karlsruhe Institute of Technology, Germany  
 Patrick Nathen, Liliium GmbH, Germany  
 Timothy Reis, Plymouth University, United Kingdom  
 Ezeddine Sediki, Université de Tunis El Manar, Tunisia  
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 Robin Trunk, Karlsruhe Institute of Technology, Germany  
 Thomas Zeiser, Universität Erlangen-Nürnberg, Germany