Open workshop

The spring school is organized as open workshop in two parallel sessions: **Option A**dvanced and **Option B**eginners. It promotes the participants and is open for the interested general public. The spring school is organized as a non-profit event in the framework of the EU projects *SeaDream* and *Falcon*. This year's spring school venue is the University of Liverpool.

Registration fee includes:

Lecture notes (theory lecture part: pdf, software lab part: printed), lectures by invited speakers, software tutorial mentored by *OpenLB* developers, daily lunches, 2x dinner (including Spring School dinner), social excursion, daily two coffee breaks, certificate of participation. Several scholarships are available for students (MA or PhD candidates).

Pricing

	Early registration by 2. March 2026	Regular registration
Academia	£ 450	£ 600
Industry	£ 1,800	£ 2,000

Important dates

Spring School 23. - 27. March 2026

Early registration 2. March 2026

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-2026

Email: springschool@openlb.net

Falcon

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101138305.

Funded by the European Union

SeaDream

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101182847.

Funded by the European Union

KIT Campus TRANSFER

KIT Karlsruhe Institute of Technology

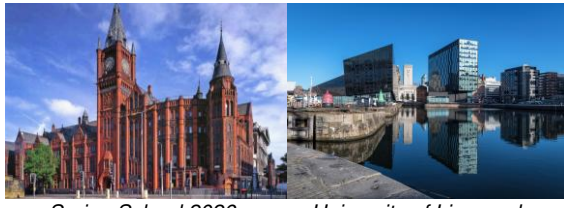
OpenLB

LBRG

UK COMES Consortium on Mesoscale Engineering Sciences

VM

UNIVERSITY OF LIVERPOOL



Spring School 2026 venue, University of Liverpool

9th Spring School

Lattice Boltzmann Methods

with *OpenLB* Software Lab

23. - 27. March 2026

Liverpool, United Kingdom

Open Workshop

www.openlb.net/spring-school-2026

Executive committee

John Bridgeman (UOL),
Davide Dapelo (UOL),
Mohaddeseh Mousavi Nezhad (UOL),
Shota Ito (LBRG/KIT),
Mathias J. Krause (LBRG/KIT),
Stephan Simonis (ETHZ)

Host organizations

University of Liverpool (UOL)

Venue

University of Liverpool

The field of Lattice Boltzmann Methods

Lattice Boltzmann Methods (LBM) are an established numerical technique for Computational Fluid Dynamics (CFD) and beyond. The simulation of complex multi-physics benefits strongly from the mesoscopic modelling of LBM and positions it next to traditional numerical methods. The rapid development in LBM – also driven by the emergence of massively parallel computing infrastructure – enables engineers to solve relevant problems for academia as well as for industry.

Target audience

The expected attendees are developers and researchers, from industry and academia interested to learn theoretical and practical aspects of LBM. The spring school addresses e.g., engineers, computer scientists, mathematicians, and physicists as well as Master and PhD students. The course level is either beginners (**Option B**) or advanced (**Option A**). Based on their interest in CFD, this course provides a collaborative platform for LBM, both for developers and researchers.

Objective of the spring school

The spring school introduces researchers and users from industry to the theory of LBM and trains them on practical problems. **Option B**: The first half of the week is dedicated to theoretical fundamentals up to ongoing research on selected topics in kinetic theory, scientific computing, LBM, and Partial Differential Equations (PDE). Followed by mentored training on case studies using *OpenLB* in the second half of the week. Emphasis is placed on the modelling and simulation of particulate, multi-component, and turbulent fluid flows. **Option A:** Advanced *OpenLB* users and developers are enabled to solve their own application problems and implement their own solution approaches.

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 the poster session, coffee breaks and an excursion.

Topic overview and preliminary agenda (Option B)

	MONDAY, 23.03.2026
Morning	Registration, introduction, LBM applications, short introduction by all participants
Afternoon	Scientific computing, mesoscopic modeling: kinetic theory, PDE, from micro to macro scale, LBM introduction, Chapman–Enskog expansion, boundary conditions, dimensionalisation
Evening	Poster session and dinner
	TUESDAY, 24.03.2026
Morning	LBM for turbulent flows, reactive flows, optimal control, fluid–structure interaction
Afternoon	LBM for multi-phase and multi-component flows, particulate flows, solids, efficient parallel implementation
Evening	Free, optional: help desk
	WEDNESDAY, 25.03.2026
Morning	Introduction *OpenLB,* preliminaries (*Linux*, compile, run in parallel, *ParaView*), converter, Exercise 1
Afternoon	Social event / excursion
Evening	Spring School dinner and poster award
	THURSDAY, 26.03.2026
Morning	Setup geometry, meshing, Exercise 2, place LB models, initial and boundary conditions, convergence
Afternoon	Exercise 3, get results: console, *VTK*, images, *Gnuplot* functor concept, Exercise 4
	FRIDAY, 27.03.2026
Morning	Advanced models, Exercises 5 and 6
Afternoon	Option 1: *OpenLB* for applicants: getting started to solve your own problem Option 2: *OpenLB* for developers: getting started to implement your own LB model

Preliminary agenda (Option A)

MONDAY TO FRIDAY, 23. - 27.03.2026

Supervised (**MON to WED**) & independent (**THU, FRI**) software lab: *OpenLB* for experienced applicants and developers; participation with all other attendees in short introduction, social event, poster session, dinner, and all coffee as well as lunch breaks.

Software lab and requirements

The participants are trained on practical applications, deploying the open-source software *OpenLB*. **Option B** (**WED to FRI**): Special focus is placed on case studies, which are important to understand and verify the theory presented in the lectures (**MON, TUE**). With the help of experienced tutors, beginners are enabled to set up simulations for relevant problems. **Option A**: Experienced applicants and developers are supervised by tutors (**MON to WED**) to solve their own application problems and/or implement their own LBM. They work independently (**THU, FRI**), through discussions with the tutors are always welcome. To guarantee personal tutoring and intensive exchange between experienced mentors and novices, the lab is limited to 50 participants. The attendees are responsible to bring their own laptop equipped with:

- *Up-to-date Linux, Windows 10/11, or macOS*
- *Recent C++ compiler, full C++20 support (min.: GNU GCC 12, Clang 16, or Intel ICX 2023.2)*
- *ParaView*

Windows users should prepare their laptops in advance to enable the Windows Subsystem for Linux (WSL) following the *Technical Report* 5 (www.openlb.net/tech-reports).

Speakers (preliminary)

P. Boivin (M2P2/CNRS), J. Favier (M2P2/AMU), T. Krüger, H. Kusumaatmaja (University of Edinburgh), T. Reis (University of Greenwich), D. Dapelo (UOL), Stephan Simonis (ETH Zürich), T.N. Bingert, F. Bukreev, S. Ito, M.J. Krause, A. Kummerländer, D. Teutscher (LBRG/KIT)