ADMISSION AND ACCOMMODATION

The course is offered in a hybrid format, allowing participants the flexibility to attend either in person or remotely via the Microsoft Teams platform.
Limited spots are available for on-site attendance and will be allocated on a first-come, first-served basis.

Registration fees:

- On-site participation, 480.00 Euro + VAT*
Includes a complimentary bag, five fixed menu buffet lunches, hot beverages, downloadable lecture notes.
Deadline for on-site application is March 1, 2026.

- Live Streaming Online Participation: 200.00 Euro + VAT*
Includes downloadable lecture notes.
Deadline for online application is March 20, 2026

Application forms should be submitted online through the website: http://www.cism.it.

** where applicable (bank charges are not included) - Italian VAT is 22%.*

JMBC participants should contact JMBC before proceeding with registration.

A message of confirmation will be sent to accepted participants. Upon request a limited number of on-site participants can be accommodated at CISM Guest House at the price of 35.00 Euro per person/night (mail to: foresteria@cism.it).

CANCELLATION POLICY

Applicants may cancel their registration and receive a full refund by notifying CISM Secretariat in writing (by email) no later than:
- March 1, 2026 for on-site participants (no refund after the deadline);
- March 20, 2026 for online participants (no refund after the deadline).
Cancellation requests received after these deadlines will be charged a 50.00 Euro handling fee. Incorrect payments are subject to Euro 50,00 handling fee.

For further information please contact:
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ACADEMIC YEAR 2026

Centre International des Sciences Mécaniques
International Centre for Mechanical Sciences

FLUIDS AND FLOWS

CISM-JMBC Joint Advanced School
coordinated by

Federico Toschi
TU Eindhoven, The Netherlands

JMBC Representative
Ruud Henkes
TU Delft, The Netherlands

CISM Representative
Alfredo Soldati
TU Wien, Austria

Udine ***March 30 - April 3*** **2026**

FLUIDS AND FLOWS

Fluids and fluid flows are everywhere and are key to a vast number of scientific problems and industrial applications. Fluid flows can display extremely different behavior depending on the lengthand time-scale of observation, on the internal fluid structure, on the flow geometry and on the presence of (external) forces.
With the present course we will offer to PhD students and to young researchers the possibility to have a rather complete overview of the different type of behavior that fluids can exhibit under different flowing conditions.
The course will cover from the dynamics of complex fluids to the statistical description of complex flows. In particular, the course will address the physics of yield stress materials, the rheology of dense fluid suspensions, the physics of laminar and turbulent flows, the (turbulent) transport of heat and mass.
Lectures will present the phenomenology, the theoretical framework and where appropriate they will illustrate numerical and experimental approaches.
The organization of the course will combine the expertise of both JBMC and CISM and will address both the Dutch scientific community working on fluid mechanics as well as the international community (CISM).
The course is addressed to PhD students and early-career researchers interested in fluid flows.

LECTURES

All lectures will be given in English. Lecture notes can be downloaded from the CISM web site. Instructions will be sent to accepted participants.

INVITED LECTURERS

Roberto Benzi - University of Tor Vergata, Rome, Italy
6 lectures on: Lattice Boltzmann Equation: Kinetic Theory and Numerical Implementation, Rheological Transitions: From Fluid Behavior to Solid-State Mechanics, Emulsion Characterization and Experimental Validation, Avalanche Dynamics, Unified Framework for Soft Glass Rheology Near Jamming, Shear Band Formation: Spatial and Temporal Evolution.

Herman Clercx - TU Eindhoven, The Netherlands
4 lectures on: Physics of rotating, thermally driven turbulent flows.
Basic aspects of rotating and stratified flows and rotating Rayleigh-Benard convection.

Elisabeth Guazzelli - Université Paris Cité, CNRS, Matière et Systèmes Complexes, France
6 lectures on: Rheology of dense granular suspensions across flow regimes.
Viscous suspension rheology, Granular rheology: unifying granular and suspension flows, Transition from Newtonian to Bagnoldian rheology: unifying inertial and viscous regimes, Across the jamming and viscous-to-inertial transitions: the soft granular rheology, Towards more complex suspensions.

Detlef Lohse - University of Twente, The Netherlands
6 Lectures on: From turbulent thermal convection to ultimate wall-bounded turbulence.
Melting of ice. Fluid dynamical challenges of inkjet printing.

Peter Schall - University of Amsterdam, The Netherlands
4 Lectures on: Soft glassy flows.
Soft glassy rheology; microscopic picture; the yielding transition; models of soft glassy rheology; nonlocal rheology; open questions.

Federico Toschi - TU Eindhoven, The Netherlands
8 lectures on: Fluid dynamics turbulence.
From Dynamical Systems to Multifractals, Phenomenology of Homogeneous and Isotropic
Turbulence, Shell Models for Turbulence, Non-Isotropic Turbulence, Lagrangian Turbulence.

TIME TABLE

TIME	Monday	Tuesday	Wednesday	Thursday	Friday
	March 30	March 31	April 1	April 2	April 3
9.00 - 9.45		Toschi	Guazzelli	Lohse	Schall
9.45 - 10.30	Registration	Toschi	Guazzelli	Lohse	Schall
11.00 - 11.45	Toschi	Benzi	Toschi	Clercx	Clercx
11.45 - 12.30	Toschi	Benzi	Toschi	Clercx	Clercx
14.00 - 14.45	Guazzelli	Guazzelli	Lohse	Toschi	
14.45 - 15.30	Guazzelli	Guazzelli	Lohse	Toschi	
16.00 - 16.45	Benzi	Lohse	Benzi	Schall	
16.45 - 17.30	Benzi	Lohse	Benzi	Schall	
18.00	Welcome Aperitif				