

20th Multiphase Flow Conference & Short Course

November 11 - 15, 2024 Dresden

HZDR

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Ansys

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OpenFOAM
The OpenFOAM Foundation

CADFEM



20th Multiphase Flow Conference & Short Course

Multiphase Flows – Simulation, Experiment and Application

November 11 - 15, 2024 Dresden

Organisation & Information

Languages The conference language will be English.
Location Helmholtz-Zentrum Dresden – Rossendorf
Contact multiphase@hzdr.de

Programme Highlight
A highlight of the event will be a visit of the TOPFLOW, TOPFLOW+, DRESDYN and LIMMCAST experimental facilities of HZDR.

Short Course

Our Short Course, two days – from Monday noon until Wednesday noon, is designed to provide knowledge of the use of numerical and experimental methods for multiphase flows.

The first one and a half days of the Short Course will focus on general topics. In the morning of the third day one group will specialize on experimental techniques including laboratory practices. The other group will learn about specific multiphase capabilities of ANSYS CFX/FLUENT, Simcenter STAR-CCM+ and OpenFOAM including a demonstration case setup (parallel sessions) for each code. The numerical part will focus on finite-volume methods for Euler-Euler and Euler-Lagrange multiphase flow predictions, and on associated mathematical models. The experimental part will provide knowledge of the selection, installation and usage of modern gas-liquid measurement techniques and instruments, such as wire-mesh sensors, needle probes, optical tools as shadowgraphy or process microscopy and computed tomography systems (gamma, X-ray etc.) along with the application of data analysis tools.

The Short Course will address the interests of engineers, chemists, physicists and technicians active in research and design, who want to be informed about modern design methods and tools for multiphase flows.

Lecture Topics

- Mathematical Models for Multiphase Flows: Overview & Basic Equations
- Measurement Techniques and Experimental Investigations of Multiphase Flows
- Lagrangian Two-Phase Flow Modelling
- Euler-Euler Modelling
- Modelling of free-surface flows with focus on the VOF Method
- Interfacial Heat and Mass Transfer Models
- Poly-Disperse Bubbly Flows & Chemical Reaction
- Multiscale Multiphase Flow Modelling - AIAD & GENTOP
- Optical measurement techniques in bubbly flows:
- From pattern recognition with neuronal networks to 3D liquid flow fields with Tomographic PIV
- Morphology-adaptive Multifield Two-Fluid Modelling - MultiMorph

Lecturers

- Uwe Hampel, HZDR
- Roland Rzehak, HZDR
- Thomas Höhne, HZDR
- Yixiang Liao, HZDR
- Hendrik Hessenkemper, HZDR
- Fabian Schlegel, HZDR
- Benjamin Krull, HZDR
- Richard Meller, HZDR
- Ronald Lehnigk, HZDR
- Amine Ben Hadj Ali, ANSYS Germany
- Henning Eickenbusch, ANSYS Germany
- Markus Braun, ANSYS Germany
- Claudio Santarelli, Siemens Germany
- Thomas Eppinger, Siemens Germany
- Sebastian Kriebitzsch, CADFEM Germany

Conference

The conference will take place after the Short Course from Wednesday noon until Friday noon.

Multiphase flows occur in a large variety of industrial applications, for instance in the chemical and process industry, in power generation, and in the automotive industry. In order to improve the quality of these products, to accelerate their development, and to increase their safety, it is important to better understand, model, and simulate multiphase flows.

The goals of the conference are to discuss the state of the art in multiphase flow research and applications, and to foster discussion and exchange of knowledge. Experts from the experimental side, from modelling and simulation, as well as experts from the application field are invited to present their research and results to a worldwide audience.

General topics of interest include

- Simulation technology for multiphase flows
 - Phase interaction models
 - Turbulence models
 - Solution algorithms
 - Multi-scale modelling techniques
- Application of simulation methods to multiphase flow problems
- Experimental investigations of multiphase and magneto-hydrodynamic flows
- Measurement methods for multiphase and magneto-hydrodynamic flows

Call for Abstracts

Oral and poster presentations are welcome. The submission of a single-sided abstract is required before **August 15, 2024**. Please use the form on the website for the abstract submission. Poster awards will be granted to the best three posters.

Keynote Lectures

- **Dynamics of complex particles in turbulence**
Alfredo Soldati, TU Wien, Austria
- **Exploring cohesive multiphase flow processes via particle-resolving simulations**
Eckart Meiburg, University of California at Santa Barbara, USA

Registration & Fees

Important Dates

Abstract submission

May 1st - August 15, 2024

Early bird registration

May 1st - September 30, 2024

Please consider that the number of seats is limited!

Registration

Please register at our website:
www.hzdr.de/multiphase

Registration Contact

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The registration fees include

- Short Course and/or Conference materials
- Transfers between hotels and HZDR
- Coffee breaks and lunches
- Short Course dinner and/or
- Conference dinner

You will receive further information on the Short Course and Conference with your confirmation letter. Possible forms of payment: credit card or bank transfer.

Short Course, November 11 - 13, 2024

Industrial attendees € 570
Academic attendees € 375
(registrations after September 30: + € 50)

Conference, November 13 - 15, 2024

Industrial attendees € 325
Academic attendees € 225
(registrations after September 30: + € 50)

Package price for Short Course and Conference

Industrial attendees € 725
Academic attendees € 495
(registrations after September 30: + € 100)