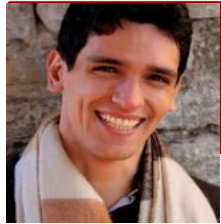




Speaker

Dr. Julien CHAUCHAT
Université Grenoble Alpes

Prof. Julien Chauchat is an associate professor at Grenoble INP - UGA, teacher at ENSE3 (école d'ingénieurs pour l'énergie, l'eau et l'environnement) and researcher at LEGI (Laboratoire des Ecoulements Géophysiques et Industriels). This research interests are related to the modeling particulate geophysical flows using a two-phase flow approach.



Speaker

Prof. Hermes Gadelha
University of Bristol, UK

Prof. Hermes Gadelha is a Senior Lecturer in Mathematical and Data Modelling, School of Engineering Mathematics and Technology, University of Bristol, UK. He was awarded with the "Best of Bristol Lecturer Award" in 2020. His research work is inspired by engineering and mathematical problems found in biology, and the arts such as small-scale fluid mechanics, biological soft-matter, transport phenomena and diffusion, pattern formation & self-organization, and biomimetic devices.



Speaker

Prof. Rajendra K. Ray
IIT Mandi

Prof. Rajendra is a Professor & Chairperson of the School of Mathematical & Statistical Science at Indian Institute of Technology (IIT) Mandi, in Himachal Pradesh, India. Prof. Rajendra has earned his PhD from IIT Guwahati and was postdoc fellow at IISc and at University Paris Est. France. He has more than 15 years of research and teaching experience and has guided several PhD scholars. His research work is related to Numerical Methods for PDEs, CFD and Heat Transfer, and Mathematical Image Processing.

Contact:

Dr Dhiraj V. Patil, Associate Professor, Dept. of Mechanical, Materials, and Aerospace Engg, IIT Dharwad, KA. email: dhiraj@iitdh.ac.in
For any information please contact,
Mobile No: 8948576035, 9418752087

SPARC sponsored one-week Workshop on "Computational Fluid Dynamics (CFD) Modelling of Two-Phase Fluid Flows: Theory and Applications"

17th to 21st February 2025

About the workshop

This workshop is conducted under the SPARC project entitled "3D two-phase numerical modelling for sediment transport". Our main goal is to discuss the theoretical and computational/experimental aspect of two-phase flow modelling and recent advancements in this field. Experts from India and abroad will deliver lectures covering both foundational concepts and recent advancements in various topics.. There will be computational lab component for hands-on experience of the participants, so that the participants can start working on the workshop topics after returning back to their respective institutes. Overall, this workshop will generate human resources in this field through rigorous theoretical and practical trainings by renowned experts to the participants during the workshop.

Workshop contents

- ❖ Introduction to multi-phase flow systems
- ❖ Governing equations; Conservation principles
- ❖ Classification of two-phase flow and flow-patterns
- ❖ Physics of droplets
- ❖ Droplet-based microfluidics and passive droplet generation
- ❖ Basics of (spatial and temporal) discretization: Finite-difference method
- ❖ Basics of discretization: 1D and 2D Finite-volume methodology
- ❖ Basics of discretization: Total Variation Diminishing schemes
- ❖ Two-fluid modeling of particulate systems
- ❖ Introduction to Phase-field method
- ❖ Introduction to Volume of Fluids (VoF)
- ❖ Introduction to Lattice Boltzmann Method (LBM)
- ❖ LBM for two-phase flow systems
- ❖ Coupled Level-Set and Volume of Fluid (CLSVOF) method
- ❖ Higher-order Compact schemes for 2D flow problems
- ❖ Higher-order Super Compact schemes for 3D flow problems
- ❖ Multiphysics approaches to moving boundary problems and fluid-structure interactions

Who should apply/attend

- ❖ Faculty members, Research scientists, and Industry professionals involved or interested in Computational Fluid Dynamics (CFD) techniques for Multiphase flows.
- ❖ Postgraduate students, Research scholars, and undergraduate students working on or interested in CFD and hands-on experience.



Speaker

Dr Dhiraj V. Patil
IIT Dharwad

Prof. Dhiraj is associate professor at Dept. of MMAE and Dean (Faculty welfare) at IIT Dharwad (KA). Prof Dhiraj has earned his PhD from IISc Bangalore and has carried out postdoctoral research at JNCASR Bangalore, City College of New York, and The University of Edinburgh UK. He has more than 14 years of research and teaching experience and secured project funds for research. His research interests are in particle based simulations such as discrete element method, lattice Boltzmann method, turbulence, multiphase flow, vortex dynamics, and FSI.



Speaker

Dr Hiranya Deka
IIT Dharwad

Prof. Hiranya is an assistant professor in the Dept. of MMAE at IIT Dharwad (KA). Prof Hiranya has obtained his PhD from IIT Guwahati in 2018 and has done post-doctoral from French Institute of Petroleum and National Taiwan University. He has more than 5 years of research teaching experience. His research interests are to deploy experimental and numerical tools to understand the fundamentals of flow physics.



Speaker

Dr. Sontti Somasekhara G.
IIT Dharwad

Prof. Sontti is an Assistant Professor in the Dept. of Chemical Engineering at IIT Dharwad (KA). Prof. Sontti has completed his PhD from IIT Kharagpur in 2019 and postdoctoral studies from Polytechnic Montreal and University of Alberta, Canada. He has more than 5 years of research and teaching experience. His research interest lies in multiphase flow, interfacial phenomena, CFD, microfluidics, and bio-microfluidic research.

Registration

The maximum number of allowed participants shall be **60 (in-person)**. There is no online participation. Interested individuals (from India only) are requested to make the applicable payment and fill in the Google form by accessing the QR codes below to complete the registration. **Last date for registration is February 15, 2025.**

Participant	Fee (₹)	GST (₹)	Total (₹)
Students (UG/PG/PhD Scholars)	2000/-	360/-	2360/-
Faculty/Research/scientist	3500/-	630/-	4130/-
Industry professional	5000/-	900/-	5900/-

Registration fee includes lunch, tea/coffee, snacks, dinner, welcome kit, free wi-fi access, participation certificate, and access to the institute laboratories.

Click "Payment", "Registration" or scan the corresponding QR codes.

Payment



Registration



Please select the payment category: **course/seminar/workshop fee** and enter the title as: **SPARC (CFD)**

Accommodation

On-campus accommodation will be provided (16th to 22st Feb 2025) on payment basis subject to the prior request in the registration form and availability for the same. The charges will be communicated to the registered participants in the due course of time.

About IIT Dharwad

IIT DHARWAD is one of the third generation (3G) IITs started in 2016. The Institute's primary objective is to achieve global recognition in education and research by fostering receptive learning environment, creating knowledge, and promoting scientific breakthroughs and innovative technologies. With a holistic research approach, the institute collaborates in thrust areas like Sustainable Physical Infrastructure, Cyber-Physical Systems, Green Mobility, Precision Agri-Tech, and Affordable and Clean Energy. In December 2022, the Institute has been awarded with 5-star rating under Green Rating for Integrated Habitat Assessment (GRIHA), Large Development (LD) master plan.