BGCE Research Day

Program for the Research Day on June 8, 2017, 14:15 – 19:00

Location: Room 00.044, LTM-Building, Egerlandstr. 5, 91058 Erlangen

Arrival

14:15   *Arrival of our guests from Garching & Munich (CSE & COME)*

Presentations

14:30   INF3: Introduction
                Dietmar Fey: *Welcome Address and Announcements*

14:45   FAU: Invited Talk
                Vivek Buwa (IIT Delhi):
                Multi-scale Simulations of Complex Multiphase Flows

15:45   COME (München): Work in Progress
                Georgios Pavlidis:
                Embedding earthquake analysis into BIM workflow
                Suneth Warnakulasuriya:
                Turbulent flow sensitivity formulation for adjoint method
                Bodhinanda Chandra:
                Radial function – why it is so useful

16:30   *Coffee Break*

16:50   CE (Erlangen): Presentation
                Theresa Pollinger, Nivesh Dommaraju & Christoph Schwarzmeier:
                Comparison between Lattice Boltzmann Methods
                and Finite Elements for Earth Mantle Simulation

17:45   CSE (Garching): Pro & Con
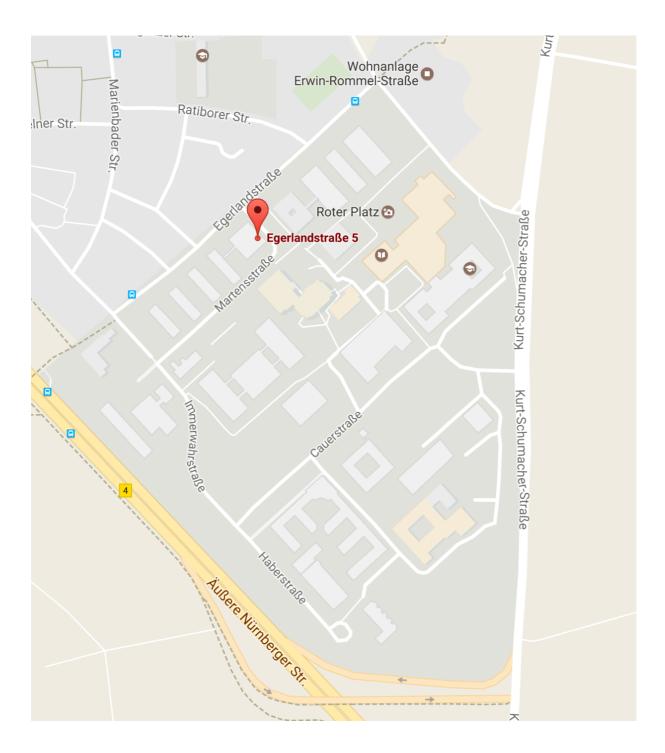   *The United States of the Earth*

Get Together

18:15   *Pizza*

Location
Room 00.044-160.01
Seminar room LTM (ground floor)
Egerlandstraße 5
91058 Erlangen

Bavarian Graduate School of Computational Engineering

BGCE Research Day, FAU-Erlangen, 08 June 2017

Multi-scale Simulations of Complex Multiphase Flows

Vivek V. Buwa
Department of Chemical Engineering
Indian Institute of Technology Delhi
New Delhi 11006, India
email: vvbuwa@iitd.ac.in

About the lecture:

Several engineering processes involve a variety of multiphase flows e.g. in chemical processing, oil and gas, energy/power generation technologies, biochemical operations, etc. Multiphase flows occurring in these process applications are complex and often involve simultaneous heat/mass transport and chemical reactions. The inherently unsteady multiphase flows, with widely varying length- and time-scales, pose severe challenges in their experimental characterization and numerical simulations. The speaker will discuss applications of continuum methods, which are based on solution of averaged (Eulerian) equations, to simulate large-scale multiphase flows e.g. gas-liquid flows in bubble columns, gas-solid flows in fluidized beds and gas-liquid flow in packed beds. The uncertainties and challenges in such large-scale simulations will be discussed. Further, the speaker will discuss how computational science & engineering can contribute to improve understanding of such multiphase flows and to improve the continuum methods, with examples of bubbly and particulate flows.

About the speaker:

Vivek Buwa completed his Ph.D. in Chemical Engineering from IIT-Bombay/National Chemical Laboratory-Pune (India) in 2004. Following his doctoral research, he worked as a post-doctoral researcher at the Institute of Fluid Mechanics (LSTM) at the University of Erlangen (Germany) during 2004–2006. In June 2006, he joined the Department of Chemical Engineering of the Indian Institute of Technology in Delhi and is currently working there as a professor of Chemical Engineering. His is a recipient of the research awards/fellowships by the Bavarian Science Foundation (2004-2005) and the Alexander von Humboldt Foundation (2005-2006), the Young Engineer Award by the Indian National Academy of Engineering (2008), Erasmus Mundus Visiting Research scholarship (July 2011) and Teaching Excellence Award by IIT Delhi (2013). His research interests are in the areas of computational fluid dynamics, multiphase flows, reactor engineering, process intensification, micro-reactor technology.