



# Oberwolfach Seminar

## Compressible and Incompressible Multiphase Flows: Modelling, Analysis, Numerics

Organizers: Dieter Bothe, Darmstadt  
Stéphane Popinet, Paris  
Christian Rohde, Stuttgart  
Richard Saurel, Marseille  
Date (ID): 4 – 10 June 2017 (1723a)  
Deadline: 2 April 2017

The seminar provides an introduction into the fundamental modelling techniques for multiphase flows and related flow problems. Basic analytical tools will be presented, major numerical discretization methods including scientific computing aspects will be explained.

Sharp-interface/diffuse-interface models and homogenized mixture models for dilute flows provide basic modelling approaches. Special applications like e.g. multicomponent flows, interfacial multiphysics or reactive flows will be addressed. The role of entropy in compressible flow as well as novel Riemann solvers and front-tracking strategies are discussed.

The numerics-oriented lectures provide an overview on a wide range of methods: level-set methods, volume-of-fluid algorithms, ghost-fluid methods, moving-mesh (ALE) methods, heterogeneous multiscale algorithms, parametric finite-element methods. An important issue is the coupling of the interface tracking to efficient bulk solvers that can be used in high performance computing.

The seminar takes place at the Mathematisches Forschungsinstitut Oberwolfach. The Institute covers board and lodging. By the support of the Carl Friedrich von Siemens Foundation travel expenses can be reimbursed up to 150 EUR in average per person (against copies of travel receipts). The number of participants is restricted to 25.

### Applications including

- full name and university/institute address
- e-mail address
- short CV, present position, university
- name of supervisor of Ph.D. thesis
- a short summary of previous work and interest
- title, ID and date of the intended seminar

should be sent preferably by e-mail (with attachments in pdf format) to:

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