

## Invitation to lecture series „Simulation Sciences“

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Wednesday, March 6th, 2019, Institute of Applied Mechanics, room 321 (A1),  
TU Clausthal, 4:15 pm

**Dr. rer. nat. Robert Mettin**  
**Georg-August University Göttingen,**  
**Third Institute of Physics**

will talk about

### **From the secret life of the bubbles**

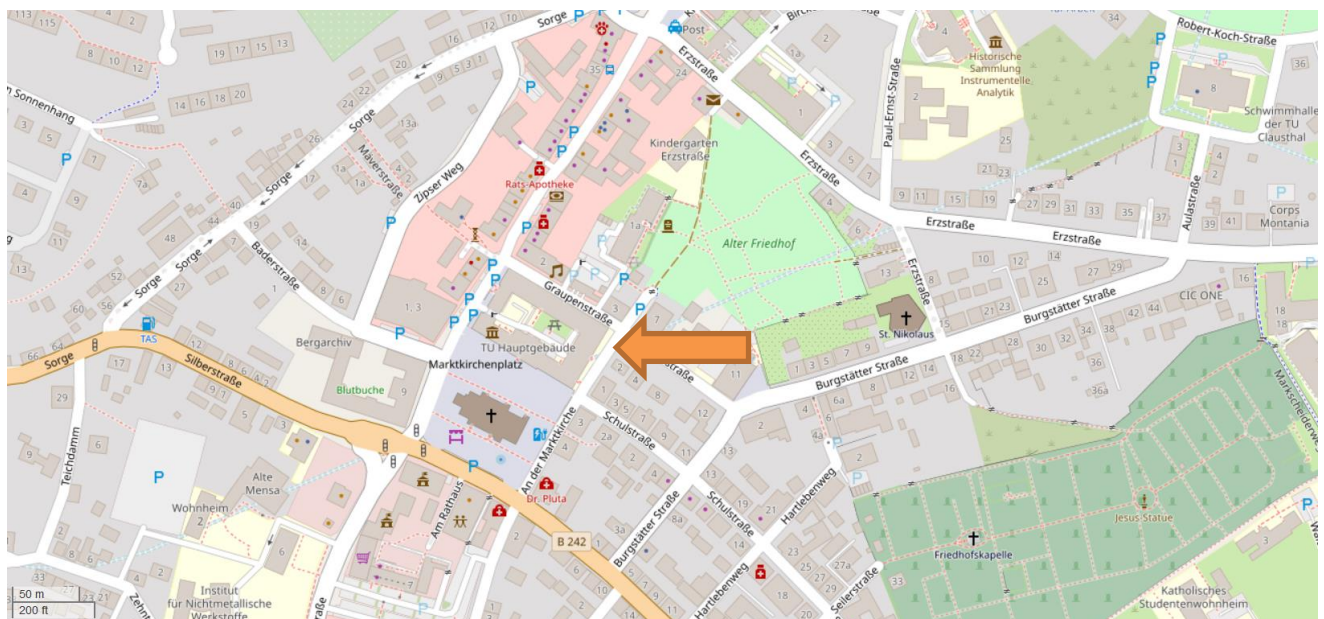
#### Content of the lecture:

Liquids can also "rupture": bubbles can form under tensile stress in currents or sound fields. Their nucleation as well as the subsequent dynamics and their interactions are referred to under the term "cavitation". Cavitation bubbles can be the cause of erosion of the hardest materials, but can also find applications in ultrasonic cleaning or sonochemistry. In addition to basic information on cavitation and bubble dynamics, some experiments and simulation approaches of the group in Göttingen will be presented. Essential difficulties for the investigation are caused by inherent nonlinearities of the bubble dynamics. This leads to relevant time and size scales, which can vary over many orders of magnitude: Bubble structures fluctuate over seconds, sonoluminescence flashes last only a few picoseconds; acoustic wavelengths are a few centimetres, nucleation takes place at the level of nanometres. In order to understand experimental findings and to explore inaccessible areas, simulations are necessary. Here, one usually has to concentrate on partial aspects in order to keep the complexity and the numerical load within limits. As an example, simulation results for bubble structure formation and for single bubble collapse at hard interfaces are shown.

Guests are welcome.

The lecture will be held in this building:

**Institute of Applied Mechanics**  
**Building A1, Room 321**  
**Adolph-Roemer-Straße 2A**  
**38678 Clausthal-Zellerfeld**



**Navigation:**  
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