



# Münchner Physik- Kolloquium

Winter  
2016/17

## Materials physics in space: the benefit of experiments in weightlessness

**Prof. Dr. Andreas Meyer**, *German Aerospace Center, Cologne*

Monday, 16 January 2017, 17:15 h  
Hörsaal 2, Physik-Department der TUM, Garching

Through the absence of gravitationally driven phenomena, like convection and sedimentation, investigations in weightlessness provide well-defined experimental conditions. This enables the application of measurement techniques, that cannot be realized on earth, it guides the development of novel earth-bound measurement principles, and it allows for the accurate and precise measurement of physical quantities. With the development of advanced container-less processing techniques, such as electrostatic levitation (ESL), and in-situ X-ray radiography, on earth as well as in microgravity on parabolic flights, sounding rockets and the International Space Station, in particular coefficients of transport of mass in liquid metals and alloys are accurately measured. Quasielastic neutron scattering and neutron diffraction on levitated liquid droplets complements these experiments. Results are discussed in the context of generally accepted text book knowledge, i.e. the relation of self- and interdiffusion (Darken's equation), of the relation of self-diffusion and viscosity (Stokes-Einstein relation), and structure-property relations (Mode-Coupling-Theory).

## Student event: Meet the speaker

We invite you to a **student-only** discussion-round with Prof. Dr. Andreas Meyer before his Munich Physics Colloquium talk.

*Be curious and feel free to ask any question.*

Monday, 16 January 2017, 16:00 h  
Seminar room PH 3076 (upper floor), Physik-Department der TUM, Garching

