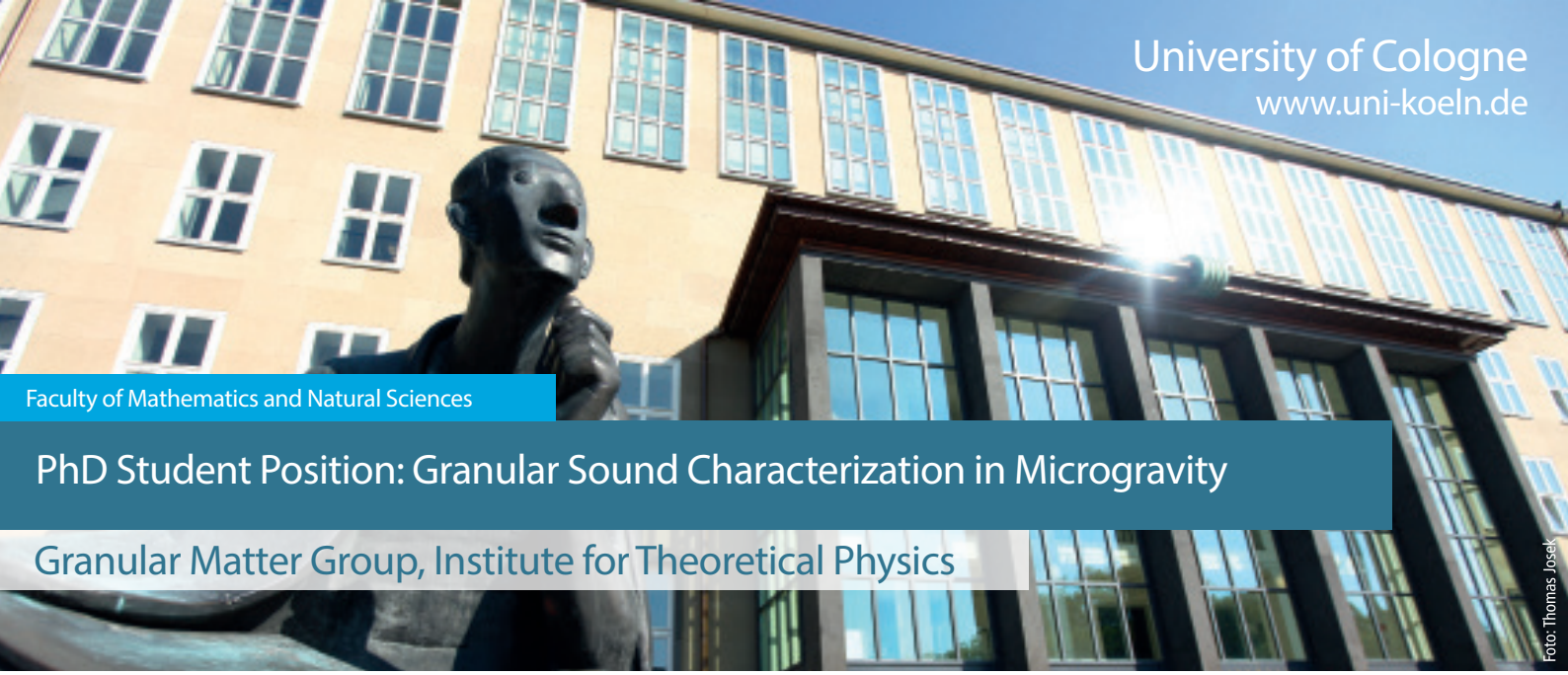

Faculty of Mathematics and Natural Sciences

PhD Student Position: Granular Sound Characterization in Microgravity

Granular Matter Group, Institute for Theoretical Physics

The University of Cologne is one of the largest and most research-intensive universities in Germany, offering a wide range of subjects. With its six faculties and its interfaculty centres, it offers a broad spectrum of scientific disciplines and internationally outstanding profile areas, supported by the administration with its services.

The Granular Matter Group investigates the microscopic mechanisms that determine the collective mechanical properties of large particulate systems. We study transitions between granular solid-/fluid-/gas-like states. In a current experiment on the International Space Station (ISS), sound waves are used to probe the continuum limit of bead packing ensembles under fluctuating contact-forces and topologies.

YOUR TASKS

- Data analysis of an ongoing ISS experiment
- Ground reference measurements and refinement of parameters for new runs of the ISS experiment
- Laboratory experiments in cooperation with DLR Cologne
- Combining results of ISS and ground data with externally provided material calibration data to obtain empirical laws
- Theoretical analysis based on Effective Medium Theory
- Identifying and testing relevant mechanisms on different length scales: nonlinear force-laws, force-chain topology, distribution of force fluctuations, crystalline domains
- Exploring extensions of current theories for disordered granular matter

YOUR PROFILE

- Physics Master or equivalent
- Previous experience of working in physics labs with electronic equipment (microcontrollers, oscilloscopes, etc)
- Programming languages: C, C++, git
- Experience with Linux is beneficial
- Fluent in English, possibly German
- Capable of working in international, multidisciplinary teams
- Resilient and adaptive to high levels of stress and workloads

WE OFFER YOU

- An opportunity to participate in microgravity research on ISS
- a diverse and fair working environment
- support in reconciling work and family life
- extensive advanced training opportunities
- occupational health management offers
- local transport ticket at a discount for UoC employees
- opportunity for remote work

The position is available as soon as possible on a part-time basis (29,87 hours per week). It is limited for 3 years. If the applicant meets the relevant wage requirements and personal qualifications, the salary is based on remuneration group 13 TV-L of the pay scale for the German public sector.

The University of Cologne is committed to equal opportunities and diversity. Women are especially encouraged to apply and will be considered preferentially in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz – LGG NRW). We also expressly welcome applications from people with disabilities / special needs or of equal status.

Please send your application with proof of the sought-after qualifications to https://jobportal.uni-koeln.de.
The reference number is Wiss2208-17.
The application deadline is 30.11.2022.

If you have any questions, please contact
Prof. Dr. Matthias Sperl (matthias.sperl@uni-koeln.de).

University of Cologne