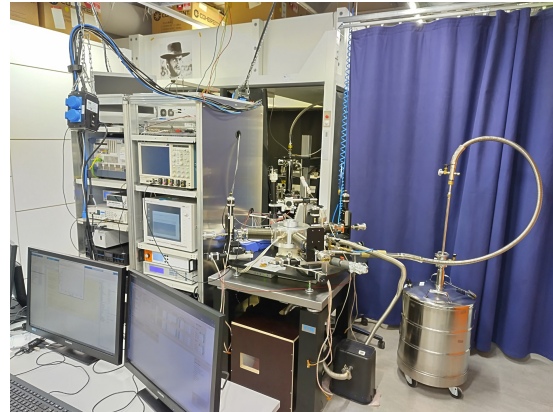


Noise in nanostructured electrical devices

The group of Prof. Salinga at the Institute of Materials Physics is researching novel materials for neuromorphic computing. We are particularly interested in so-called phase change materials (PCMs) that offer a large electrical property contrast between a conductive crystalline phase and highly resistive glass states.

It is possible to repeatedly switch a small, confined volume between crystalline and amorphous on nanosecond timescales. This makes PCMs an interesting group of materials for electronic memory/computing applications.

The electrical properties of the amorphous state are not stable but fluctuate and evolve as a function of time. While these fluctuations are usually detrimental from an application point of view, they provide a unique insight into the transport properties and the structural dynamics of the nanoscopic amorphous volume. However, quantifying these statistical fluctuations (noise) is experimentally challenging. For example, external noise can obscure the signal of interest and prevent high frequency (short timescale) measurements. In this



Experimental setup including cryostat and measurement electronics.

Student assistant (5-10h/week).

position, you will help to improve and expand our existing noise measurement setup. This means identifying and minimizing all sources of noise in the environment, be they of electronic, mechanical or thermal origin. You will further help to extend the experimental time resolution of our measurements to reveal processes on much broader time- and frequency scales than is currently possible.

We expect...

- interest in condensed matter physics and electronics
- interest in frequency and time domain electrical characterisation techniques
- interest in modelling of statistical processes
- personal initiative and high motivation

Your benefits

- Introduction to a broad range of electrical characterization techniques
- Introduction to electrical network simulation environments
- Support by experienced staff from the working group
- Collaboration in a young, dynamic team

Have we attracted your interest?

Then contact Prof. Salinga (martin.salinga@uni-muenster.de).