



# EINLADUNG zum IFP-SEMINAR

## Noise Engineering in Superconducting Microstructures

**Matthew Herbst**

Kirchhoff-Institute for Physics, Heidelberg University, Germany

Host: Silke Bühler-Paschen  
Termin: Mittwoch, 7. Dezember 2022, 16:00 Uhr  
Ort: Institut für Festkörperphysik, TU Wien  
Wiedner Hauptstraße 8-10, 1040 Wien  
Seminarraum DC rot 07 (roter Bereich, 7. OG)

### Abstract:

Superconducting devices of all types are affected by a multitude of different noise sources. While we often try to minimize overall noise in order to improve a device's performance, sometimes the noise in itself is a useful measurement quantity. In either case, whether attempting to remove noise components or specifically measure them, a detailed understanding of the composition of a device's noise spectrum is necessary.

In this talk I introduce a set-up to distinguish and quantify different noise sources in superconducting microstructures. Experimental methods include two-stage SQUID read-out, cross-correlation, and applying the fluctuation-dissipation theorem. In a second part I present a number of possible applications, such as improvements in the design of superconducting detectors, probing of magnetic moments in sample materials, and noise thermometry.