



# Fluctuations in High-Precision Metrology – Material Aspects, Modeling and Mitigation

Thermal fluctuations processes play a crucial role for the ultimate sensitivity of instruments in high-precision optical metrology such as ultra-stable laser cavities or gravitational wave detectors. The fluctuations in these optical systems result from the complex interplay of dissipation processes and optical fields. In this talk material aspects as well as modeling and mitigation strategies, of thermal noise sources in high-precision optical interferometry are discussed. It is illustrated that metasurfaces are a promising platform to overcome current sensitivity limits to enter a regime with access to fundamental experiments such as the detection of dark matter.

**Prof. Dr. Stefanie Kroker**

**Technische Universität Braunschweig**

room P 1138, Wed. 15.05.2019, 15:15