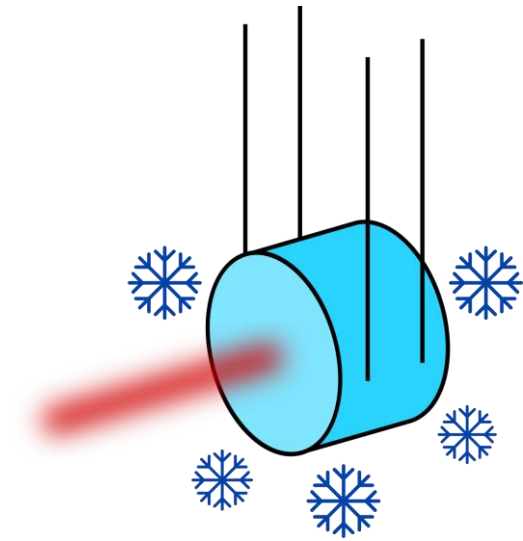


Cryogenic Test Masses for Future Gravitational Wave Detectors

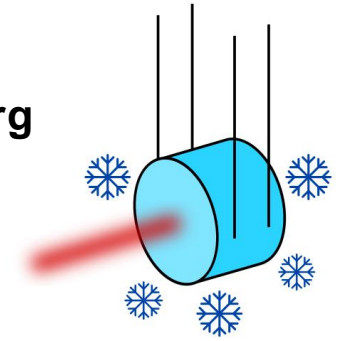


About Me

Appointments

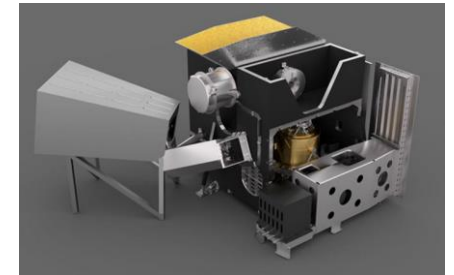
2020 – Present , Researcher for Cryogenic Experiments Tenure Track , DESY FH-ALPS, Hamburg

Cryogenic mirrors for future GW detectors; Cryoplatform



2018 – 2020, Optical Performance Lead Engineer, Airbus D&S, Immenstaad am Bodensee

Optical imaging radiometer for meteorological applications



<https://doi.org/10.1117/12.2536194>

2017 – 2018, Development Engineer at Soundskrit, Montreal

Nanomechanical resonators for acoustic sensing (i.e., MEMS microphone)



<https://soundskrit.ca/>

About Me

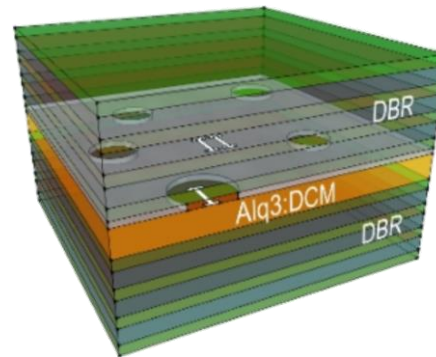
Education

PhD, Physics, 2017, McGill University, Montreal

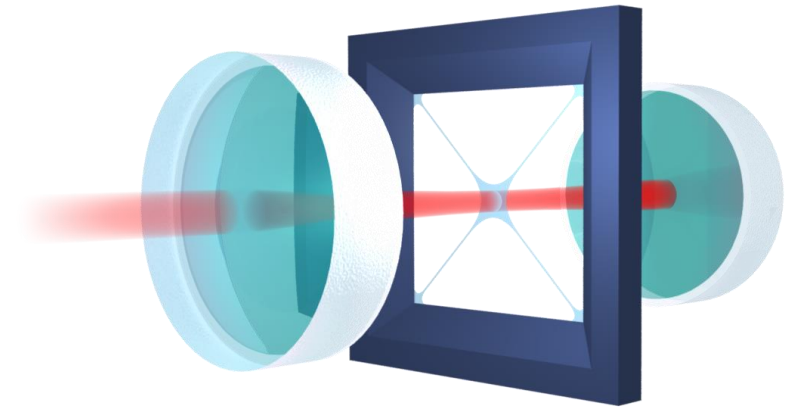
Novel mechanical resonators for sensing and cavity optomechanics

Diplom, Physik, 2011, TU Dresden

Optically pumped microcavity lasers



e.g., <https://aip.scitation.org/doi/abs/10.1063/1.4892533>



e.g., <https://journals.aps.org/prx/abstract/10.1103/PhysRevX.6.021001>

My Current Work

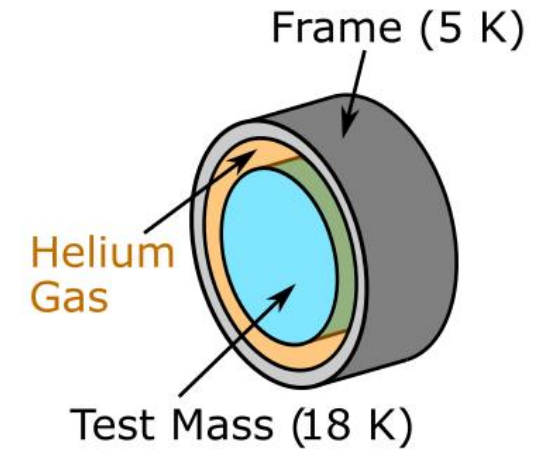
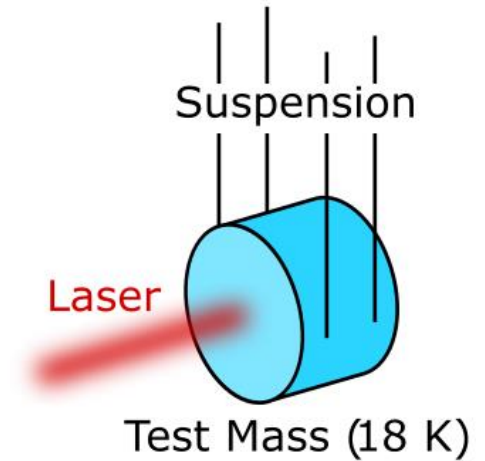
Activities and challenges

Cryogenic test masses for future gravitational-wave detectors (in collaboration with Prof. Roman Schnabel's group, UHH)

- Goal: reduce thermal vibrations of surfaces of suspended mirrors (currently limiting around 40 Hz)
- Our concept: transfer heat from mirror (18 K) to cold "frame" (5 K) via He gas ([arXiv:2101.09164](https://arxiv.org/abs/2101.09164), sub. to Class. Quantum Grav.)
- Next step: implement test setup to measure efficiency of gas cooling

Cryoplatfom at the HERA North Hall

- Goal: supply up to three experiments with liquid helium at 4.2 K
- Required: valve box with integrated sub-cooler
- Next step: work toward specification and procurement of box



My Current Work

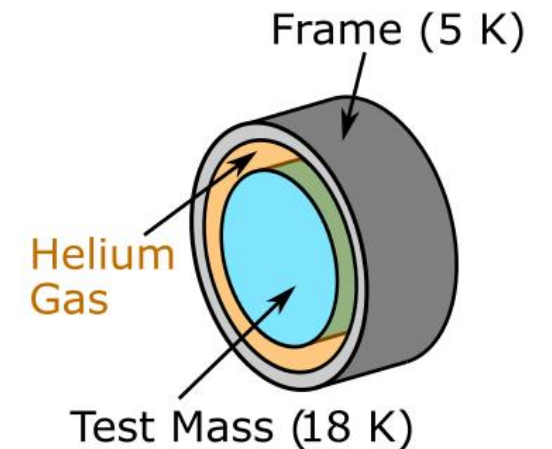
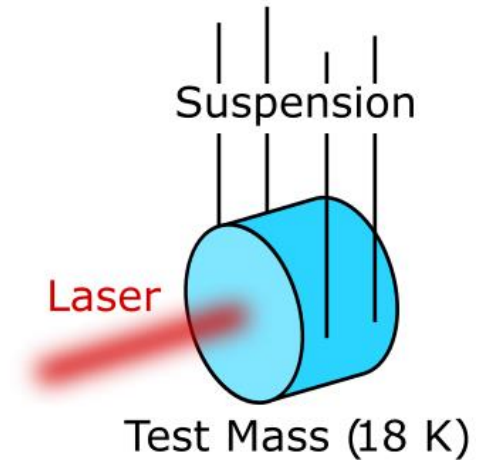
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Thank you for your Attention!