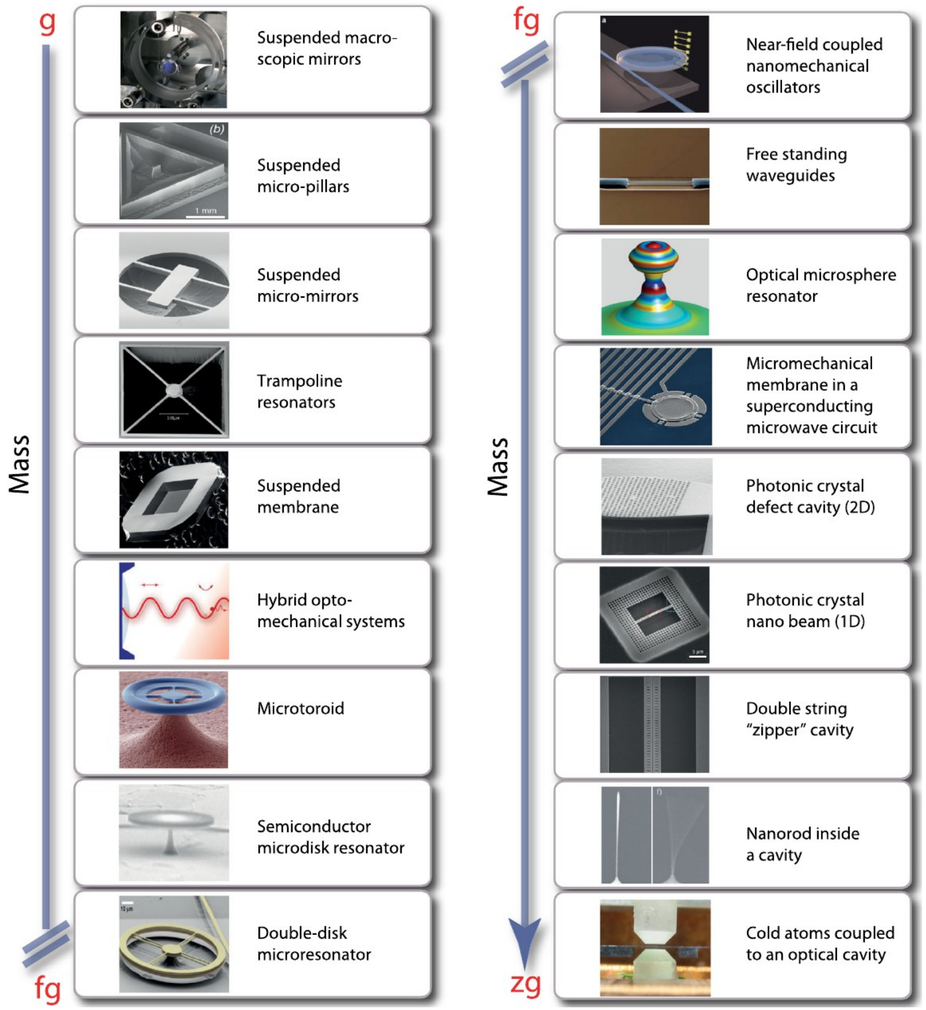
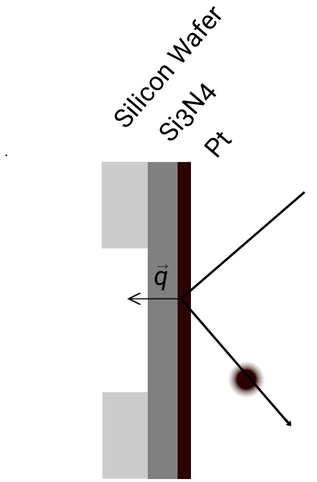
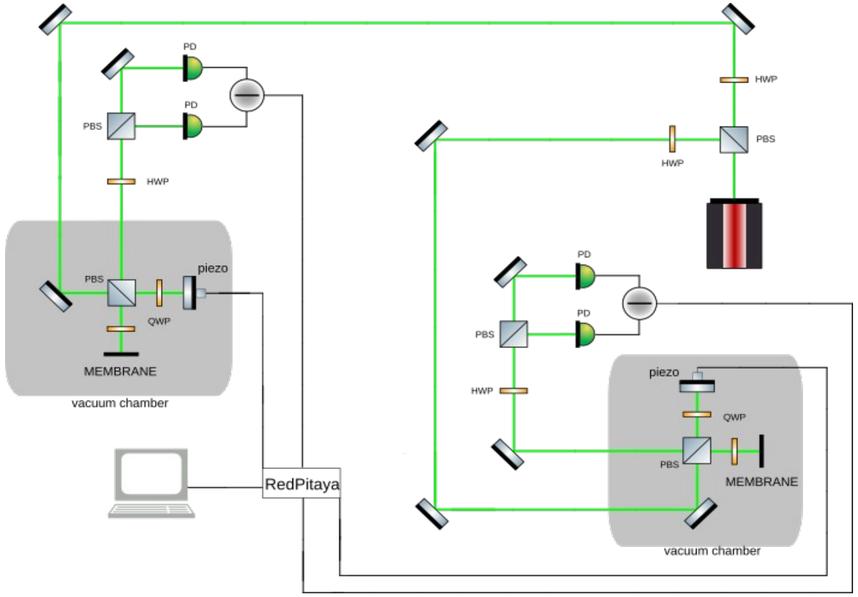
Optomechanical Particle Detection with a Membrane-Based Interferometer network

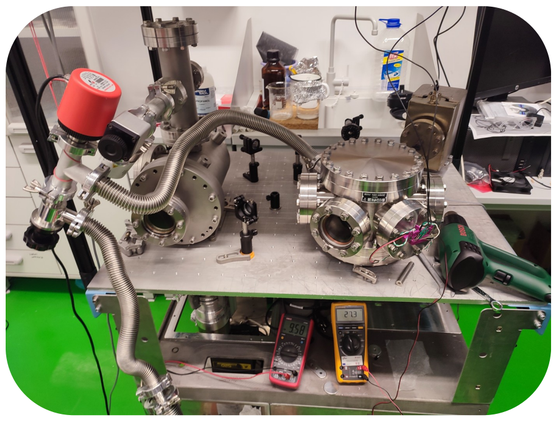


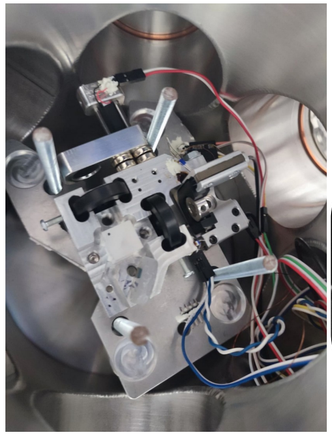


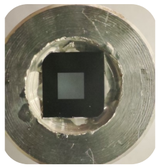
Force sensor – momentum transfer

Optomechanical Particle Detection with a Membrane-Based Interferometer network









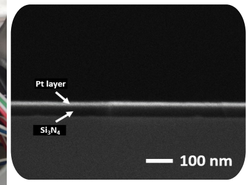
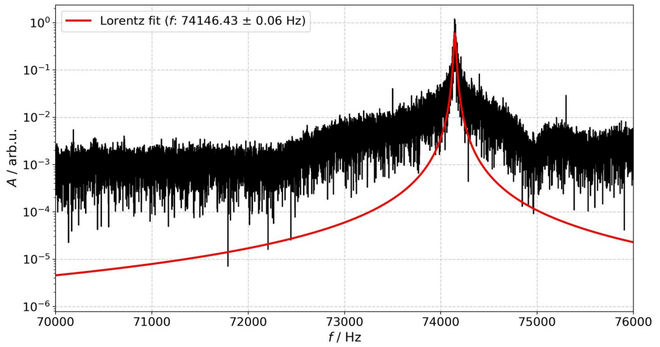
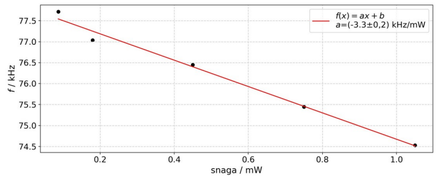


Fig. Dual 90deg membrane setup scheme,
Experimental setup under construction

~ 2 kHz / mW -> ~ fN sensitivity





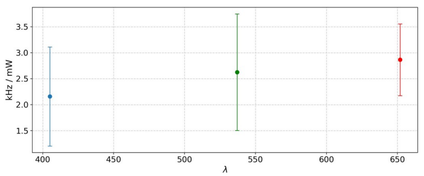
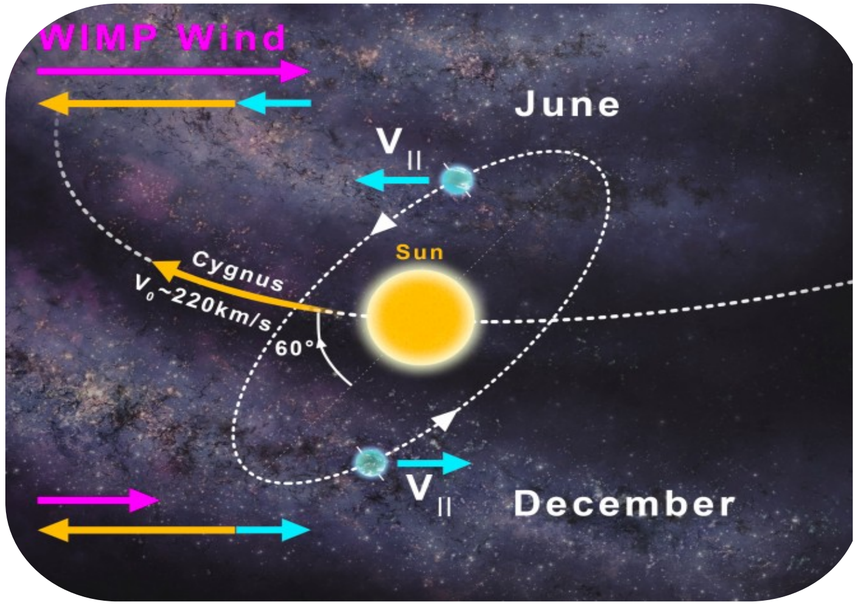


Fig. Measured first mode of membrane vibration (up)
Calibration curves for laser induced radiation pressure

Fig. Current locations of detectors
(non working)

Optomechanical Particle Detection with a Membrane-Based Interferometer network

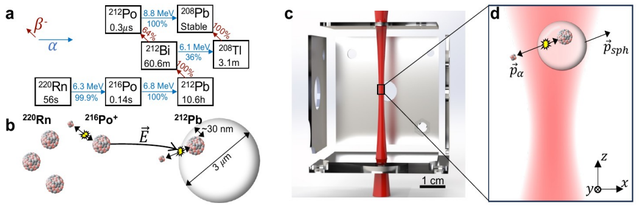


Day modulation

Year modulation

Further work

- miniaturize and make the setup more cost effective
- plug and play approach
- test different coatings – Au, Ag, doped semiconductors?
- calibration and testing with radioactive sources



Thank You!

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