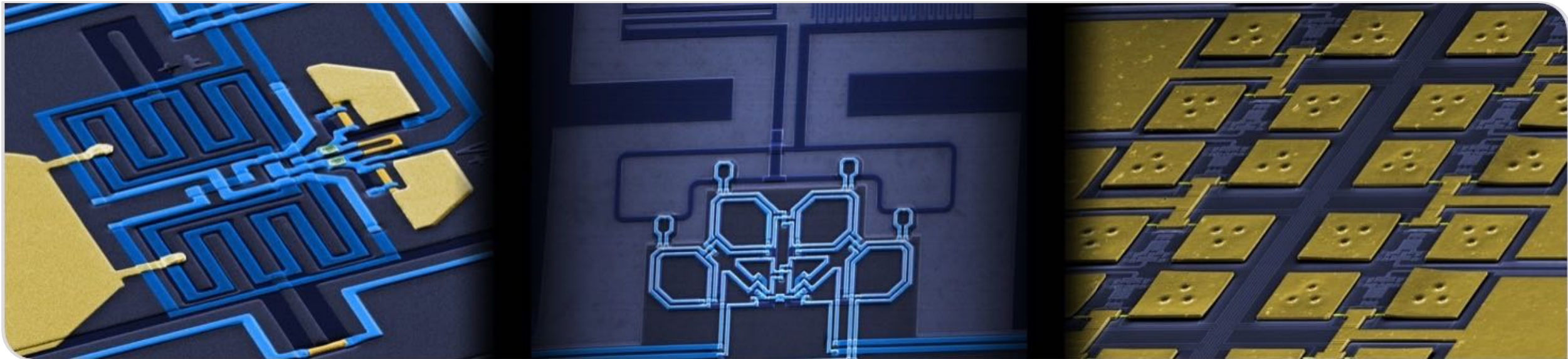


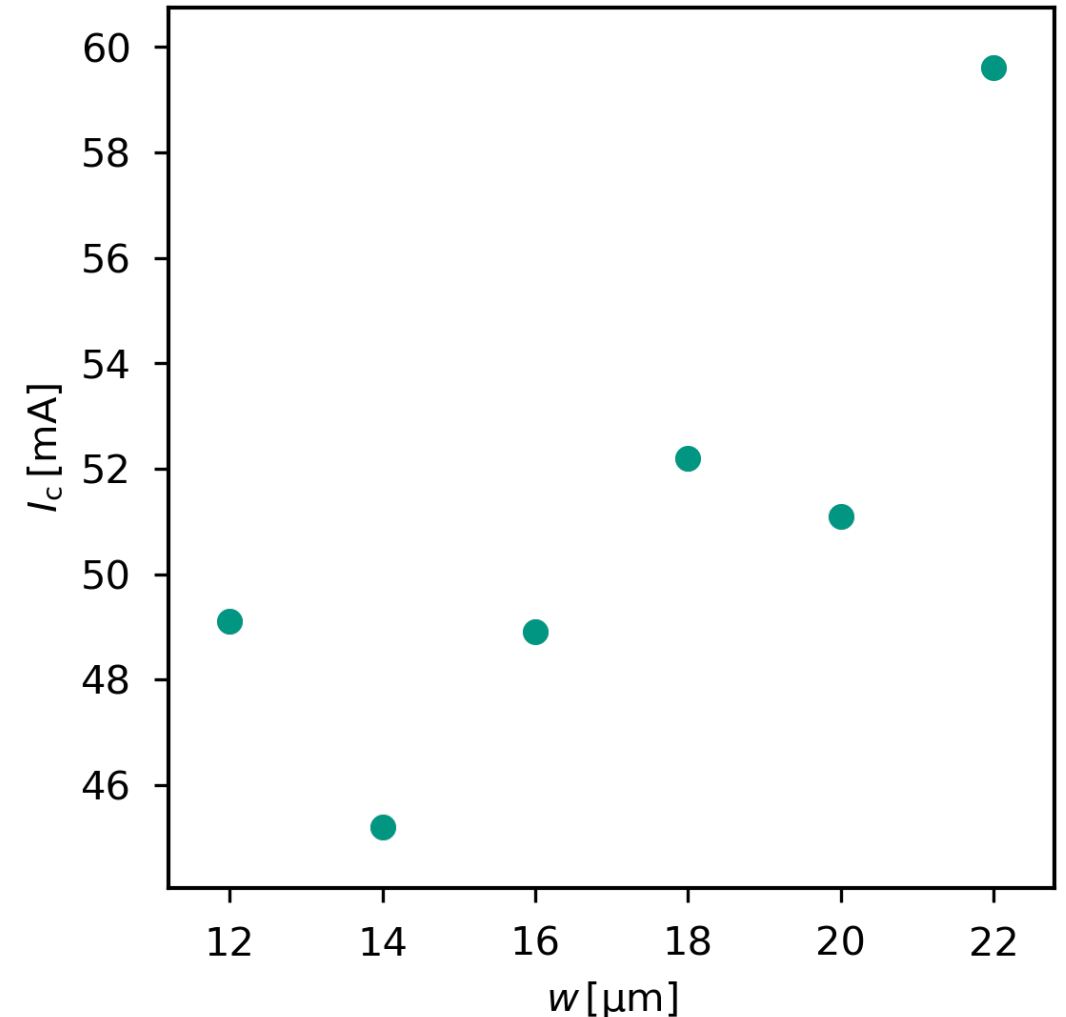
Update: Development of wafer calorimeters

General DELight Meeting 02.07.2024



Critical current measurements

- Aluminum strips with different widths
 - Height: 900 nm
 - Length: 40 μm
- Next step: Aluminum stripline over niobium stripline (Via test)



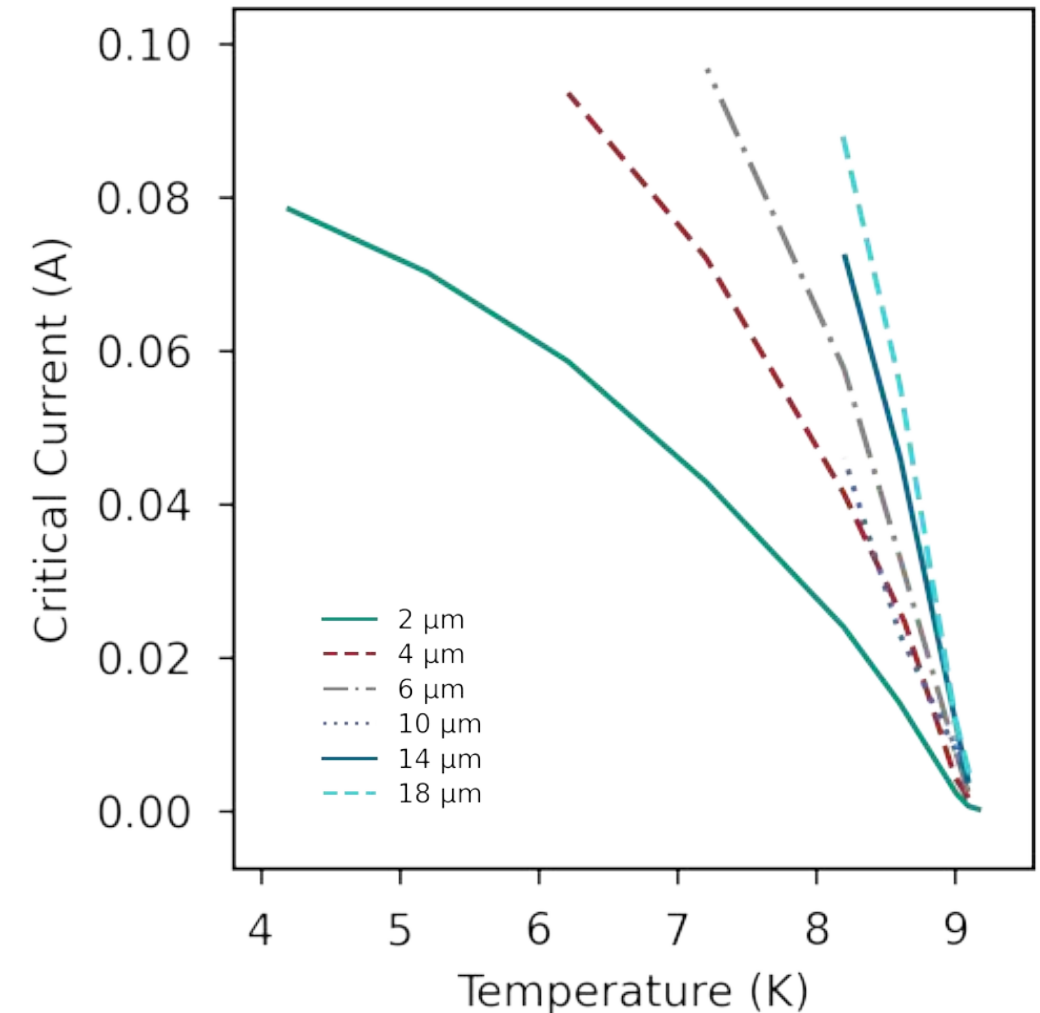
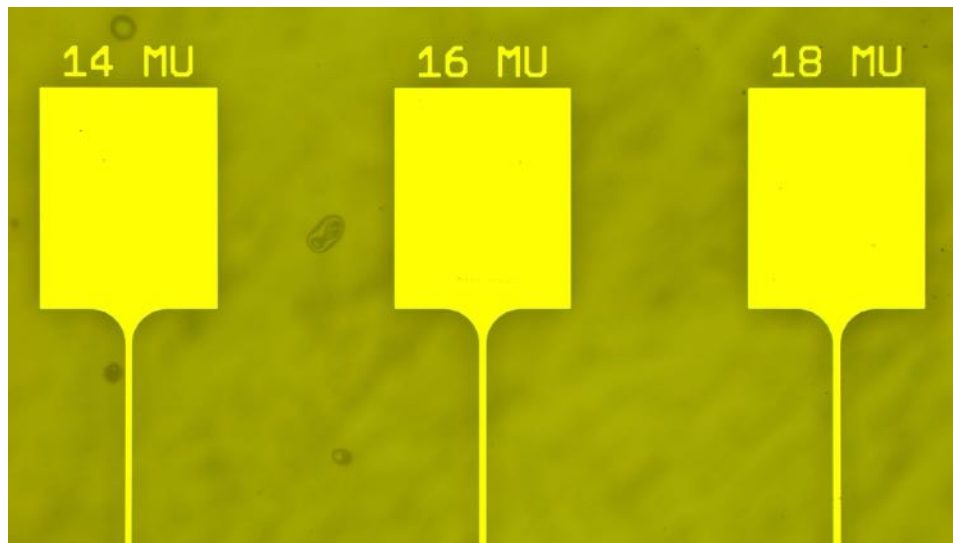
Introducing sapphire as absorber

■ Critical current tests

■ Niobium strips with different widths w

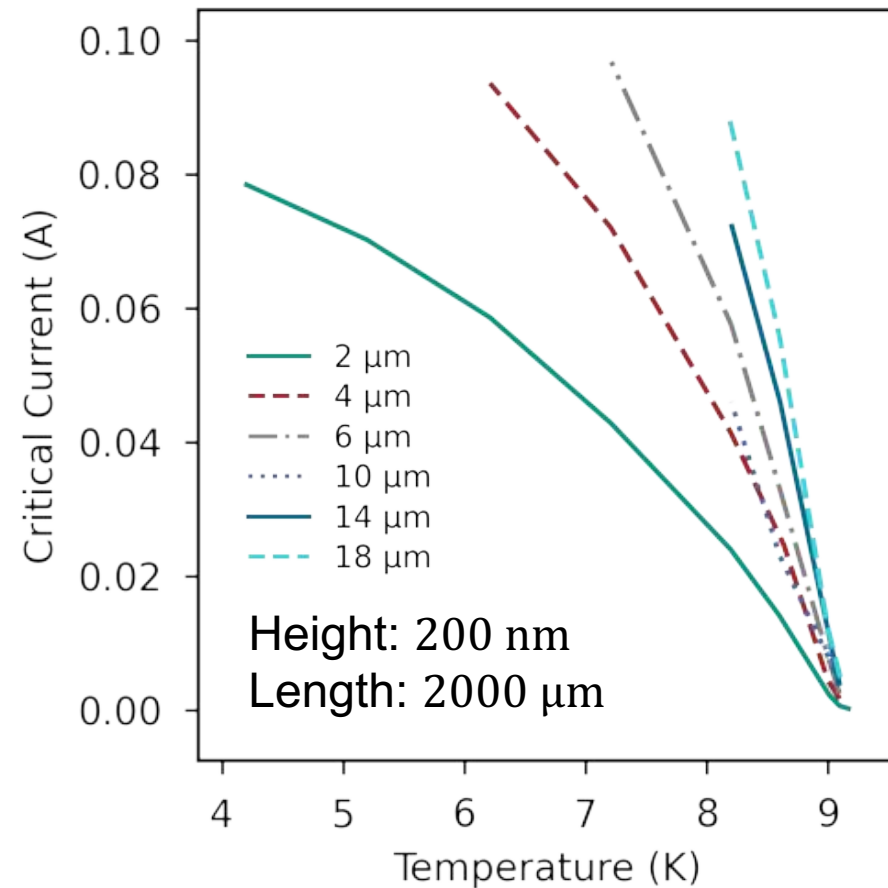
■ Height: 200 nm

■ Length: 2000 μm

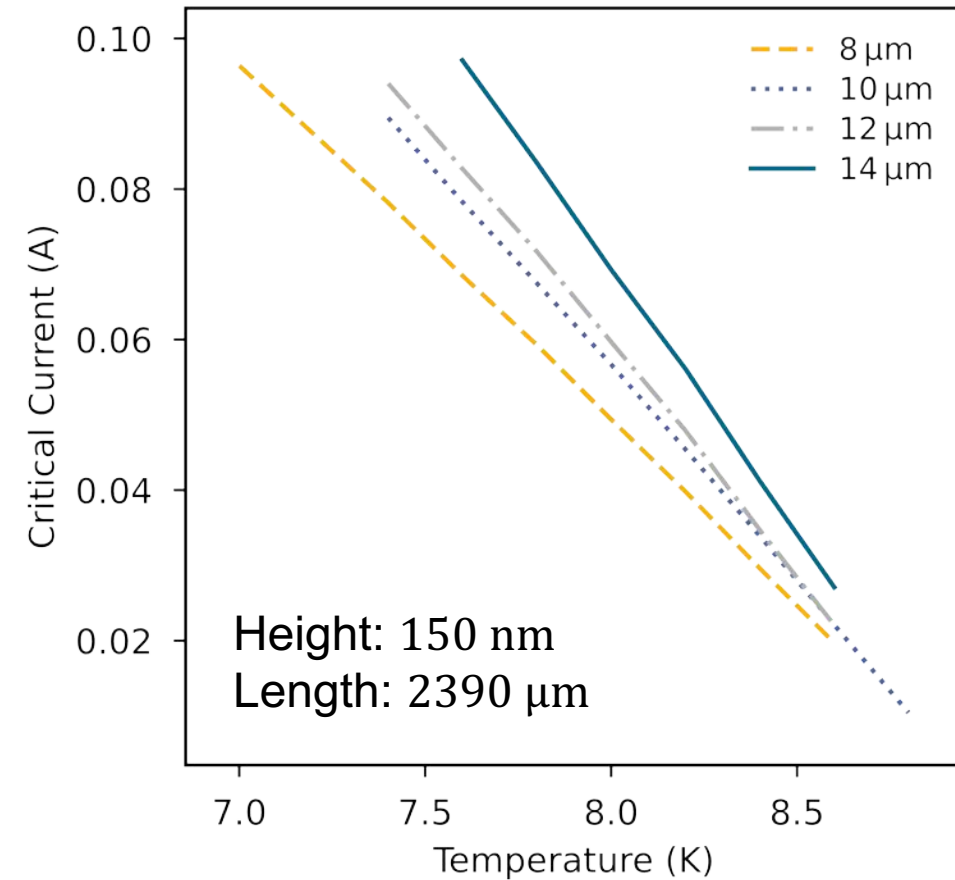


Comparison

Sapphire Chip

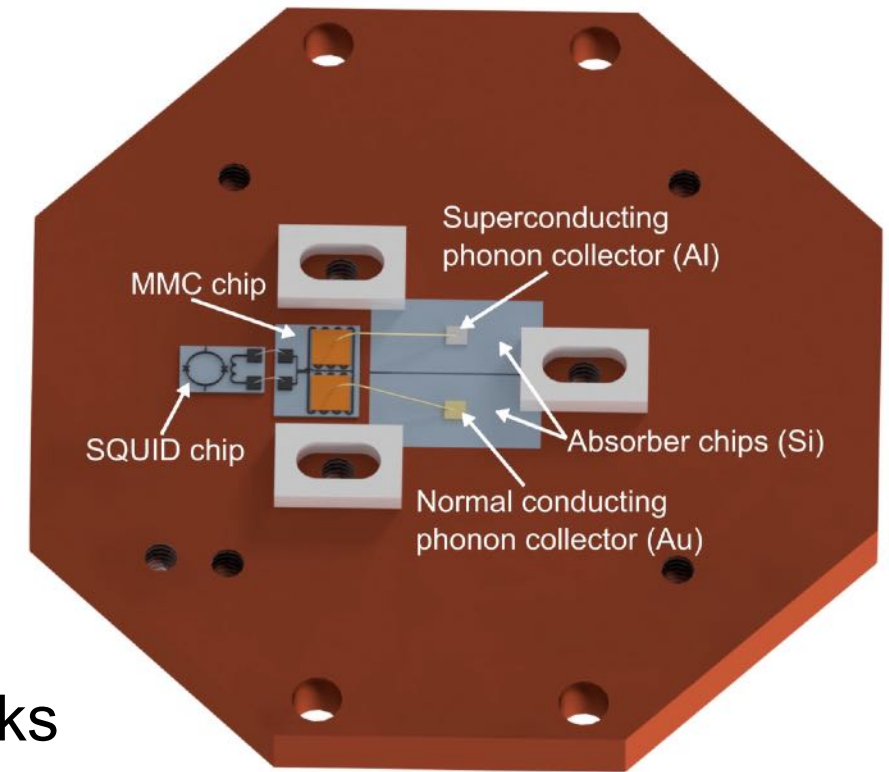


Silicon Chip

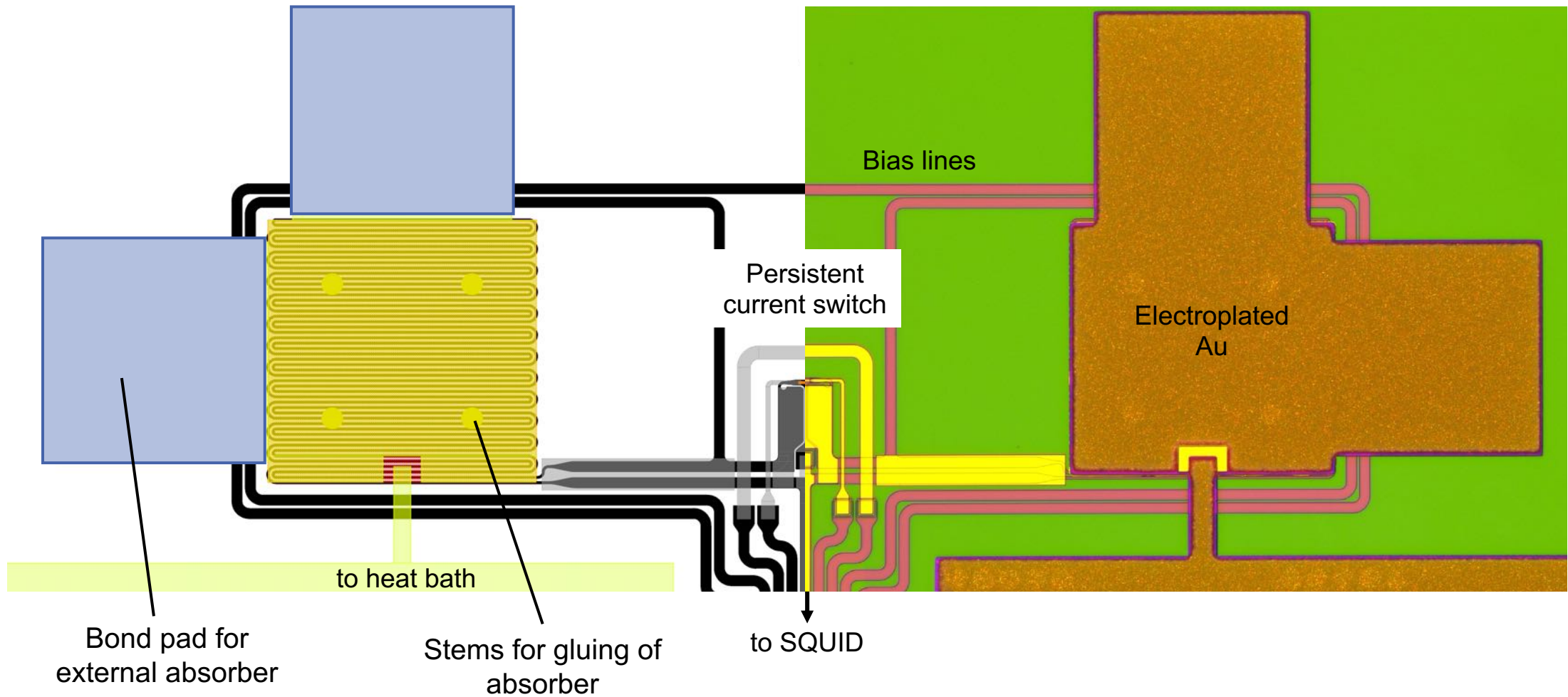


First experiment

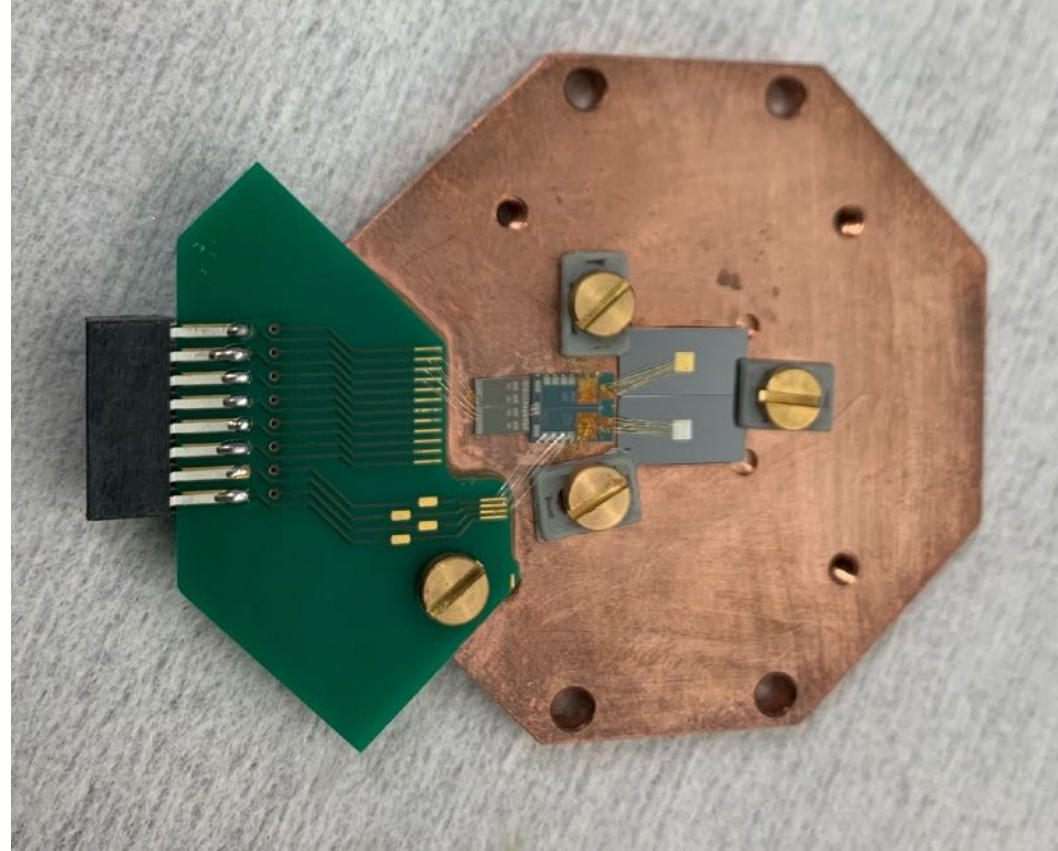
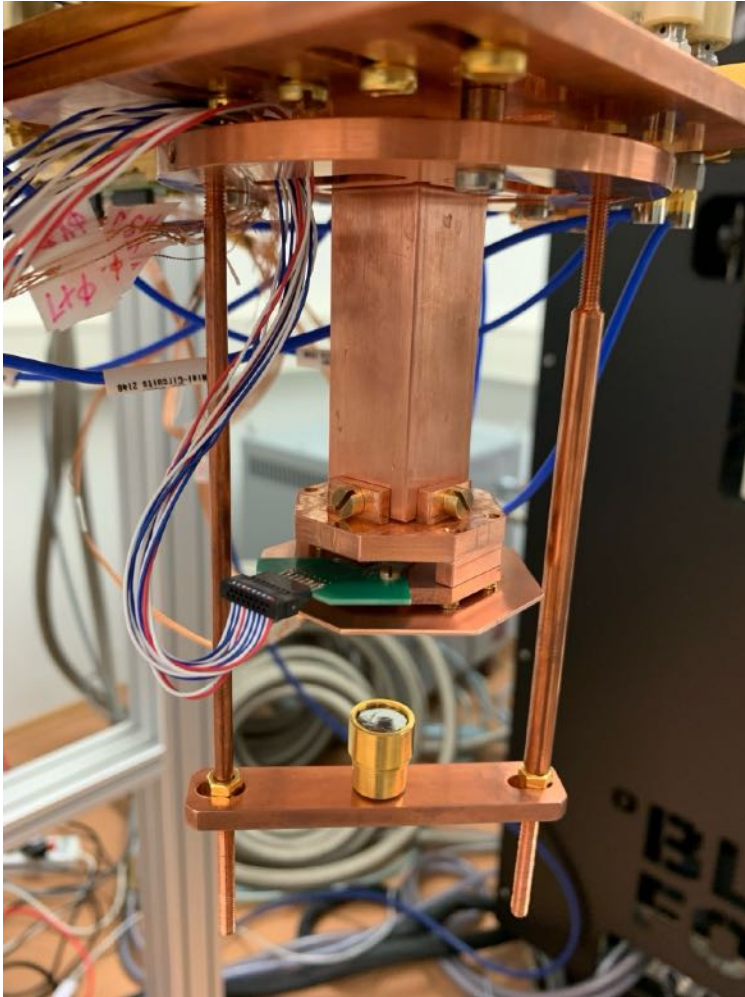
- Split detector design (Au wires)
- MMC: RoS detector chip (PrimA-LTD)
- Absorber: Two $0.4 \times 0.8 \text{ cm}^2$ Si absorber chips
 - superconducting Al phonon collector
 - normal conducting Au phonon collector
- Kr source irradiating absorber backside
- Goals:
 - 1) Proof that irradiating the absorber backside works
 - 2) Comparison of Au and Al phonon collectors



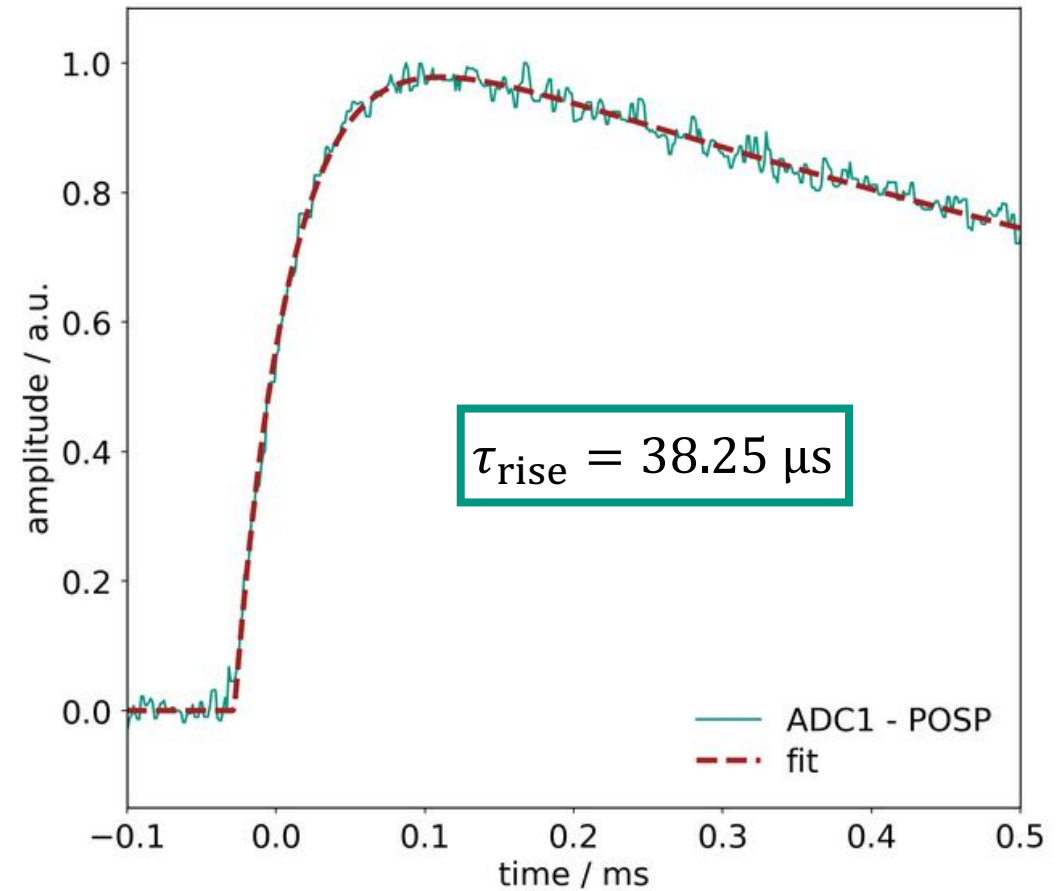
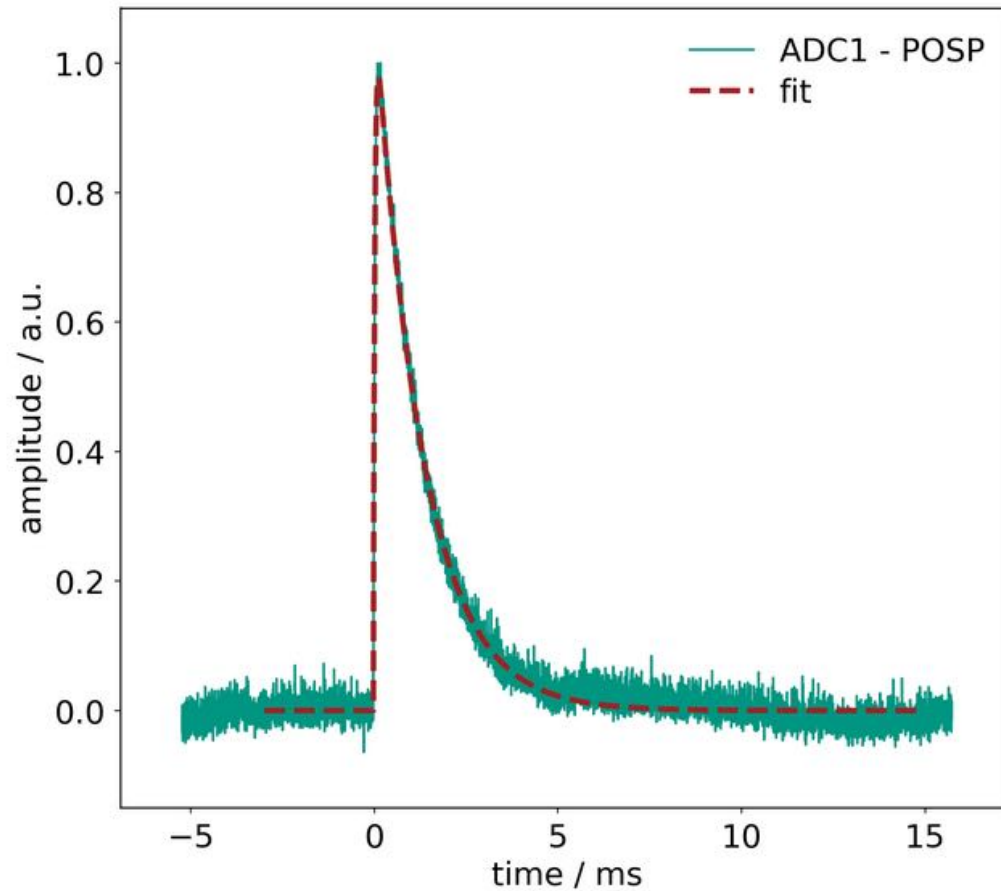
RoS detector chip



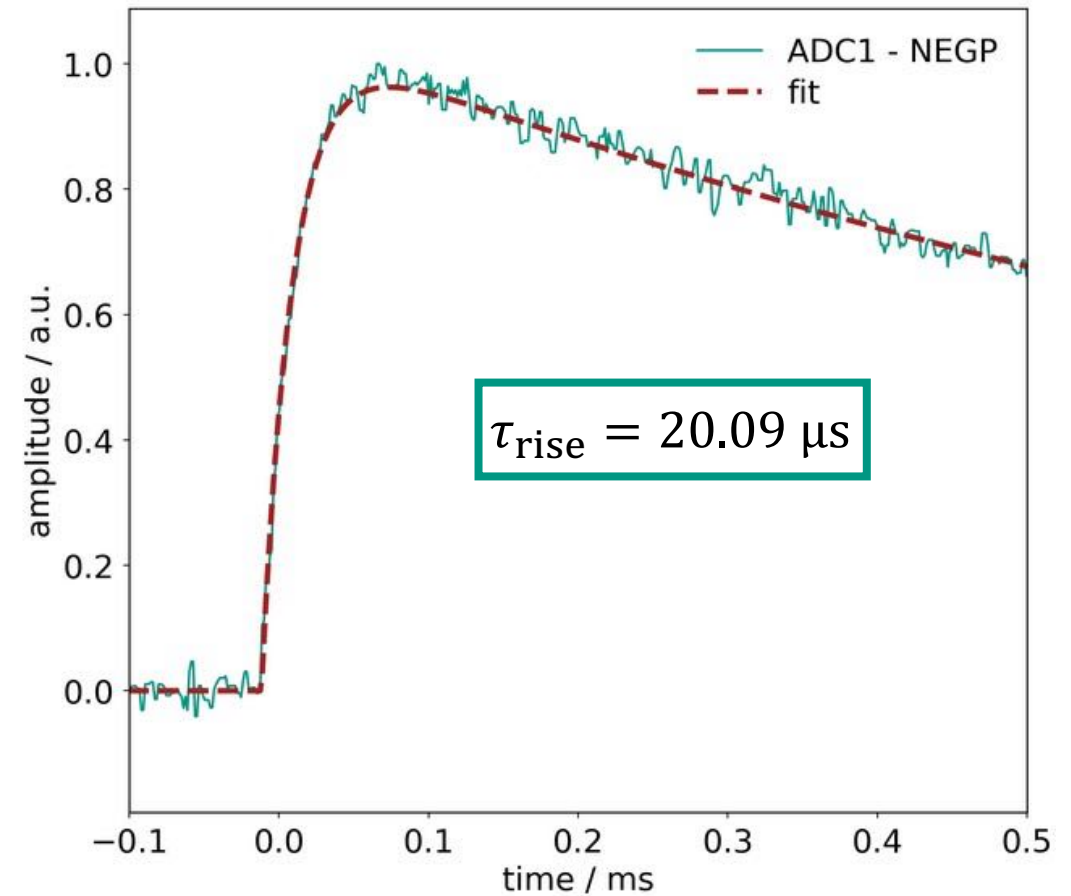
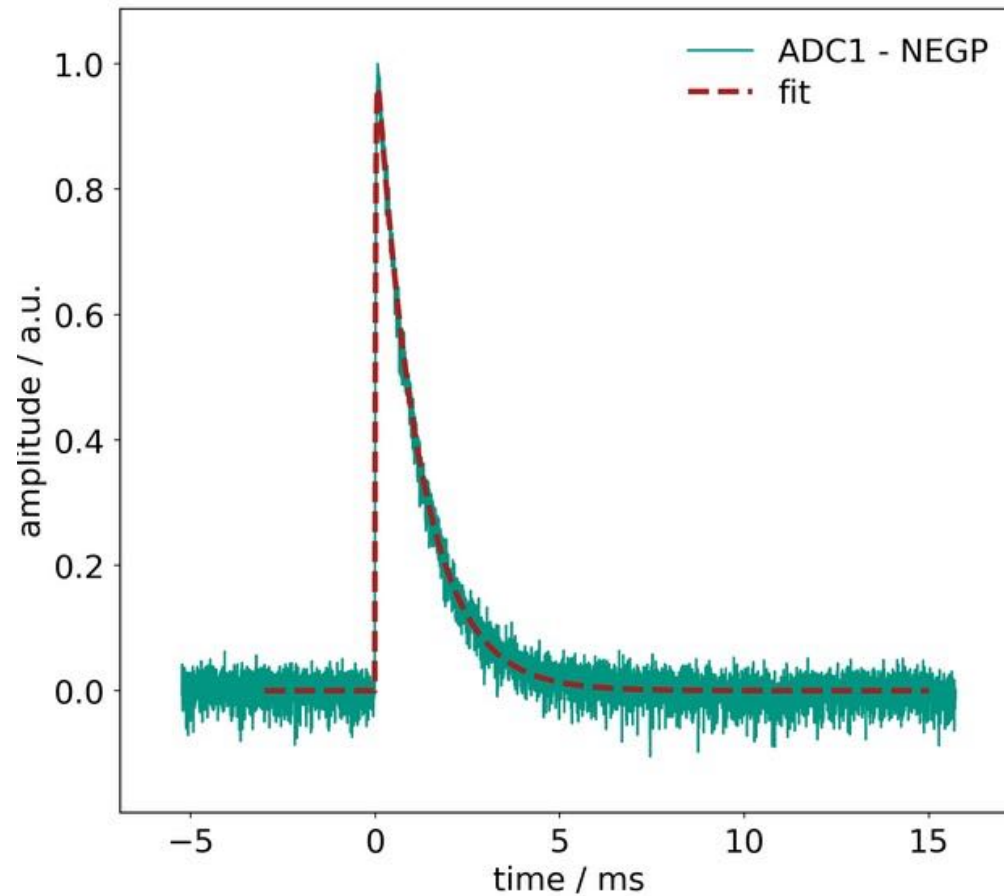
Measurement setup



Aluminum phonon collector

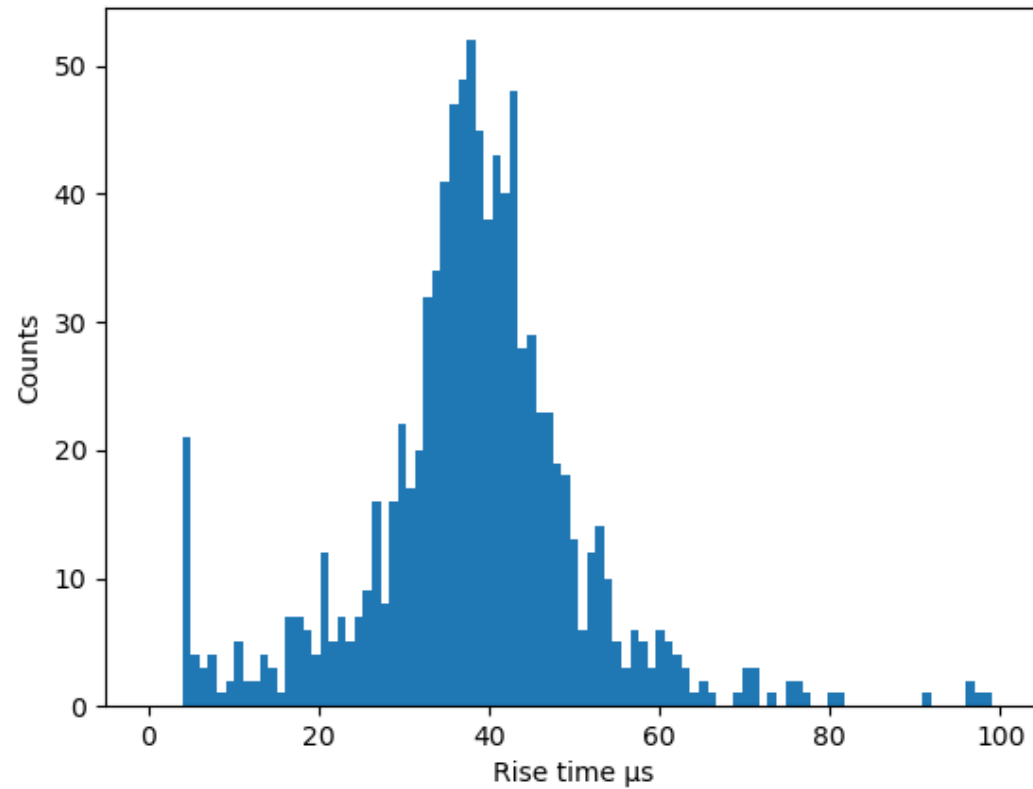


Gold phonon collector

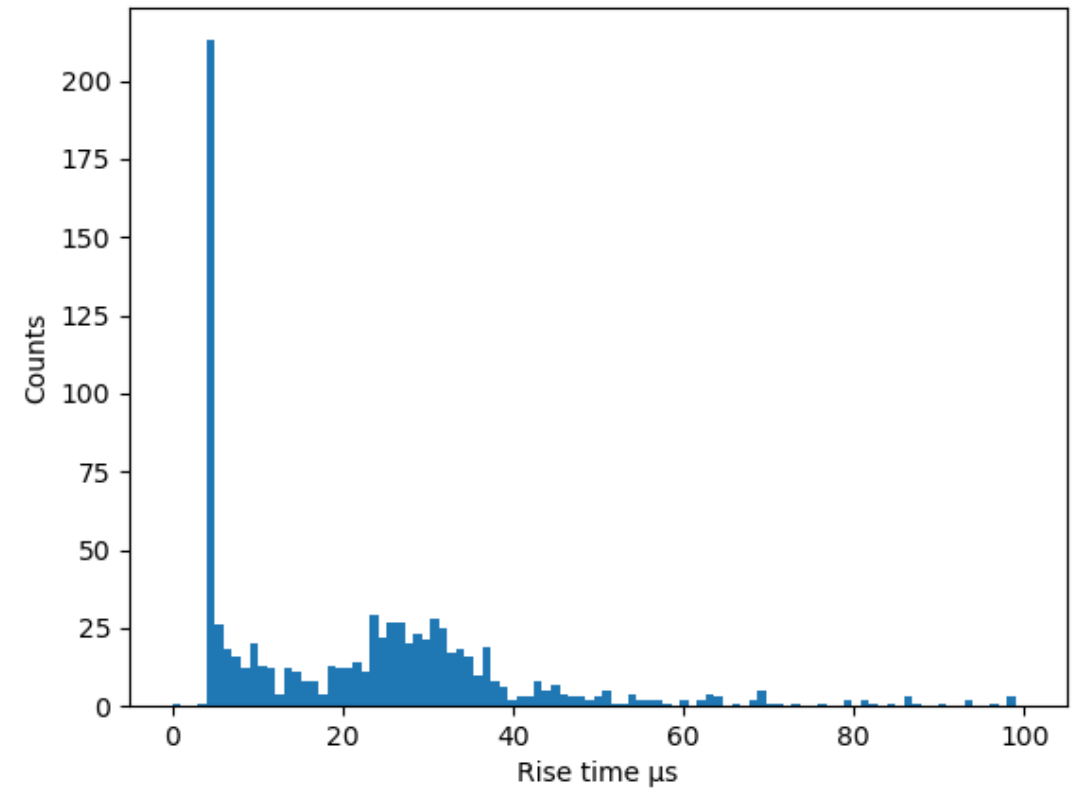


Rise times

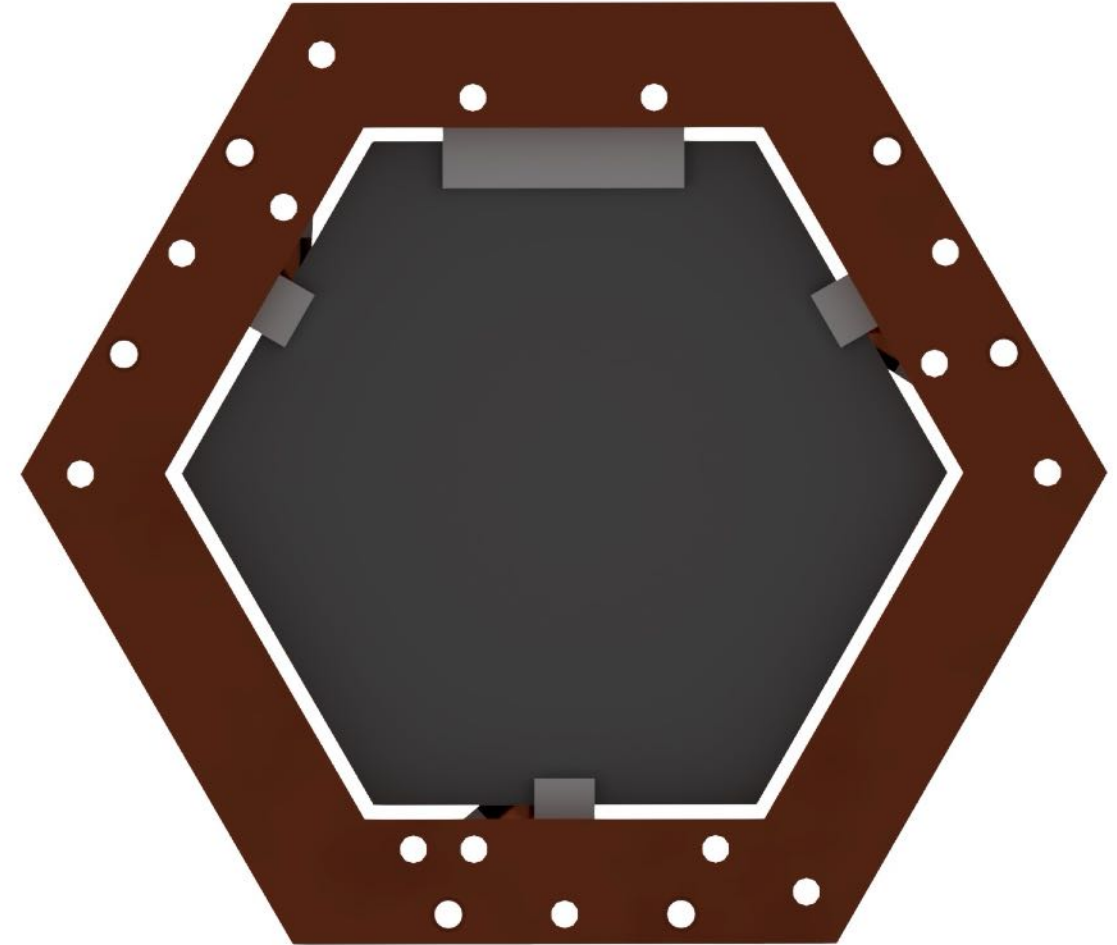
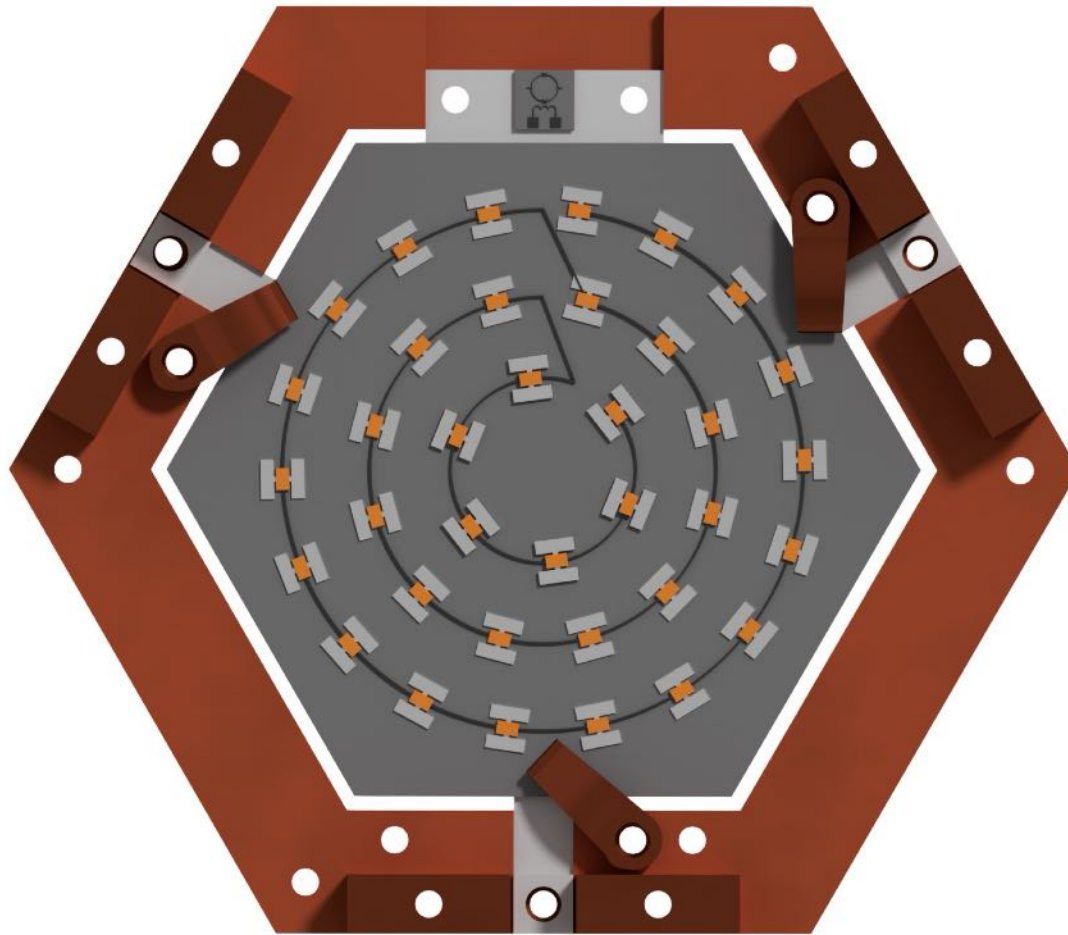
Aluminum phonon collector



Gold phonon collector

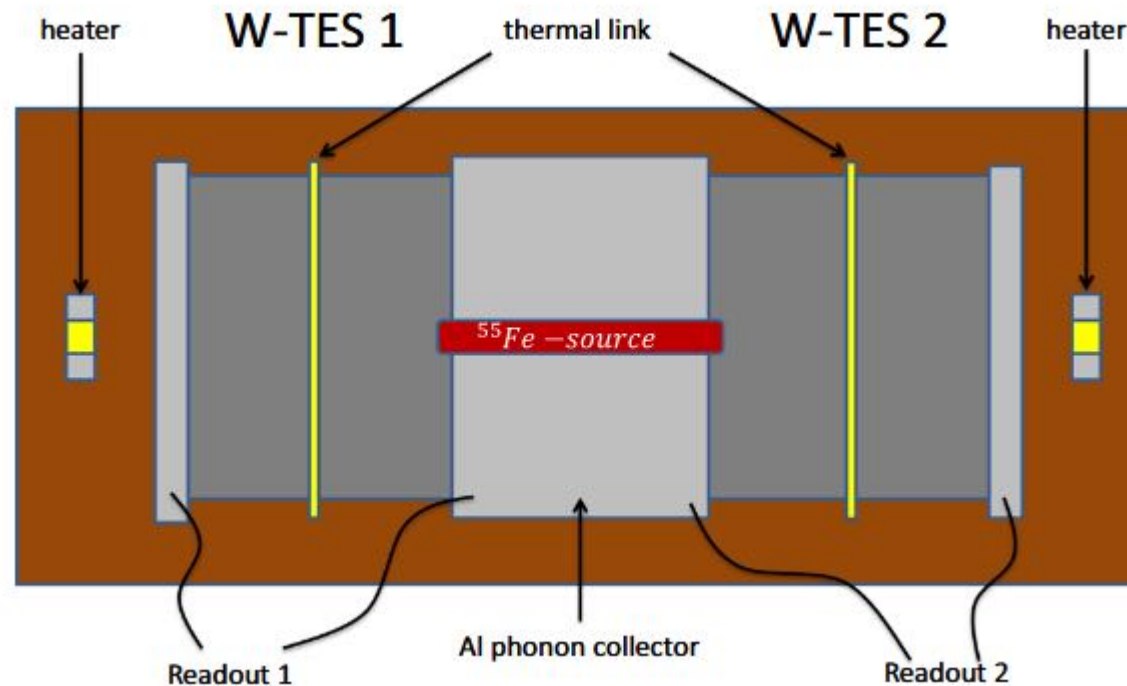


New measurement setup



Outlook

■ Experiment: Determination of quasiparticle lifetime in aluminum



G. Angloher, ..., M. Wüstrich, J Low Temp Phys **184**, 323–329 (2016)