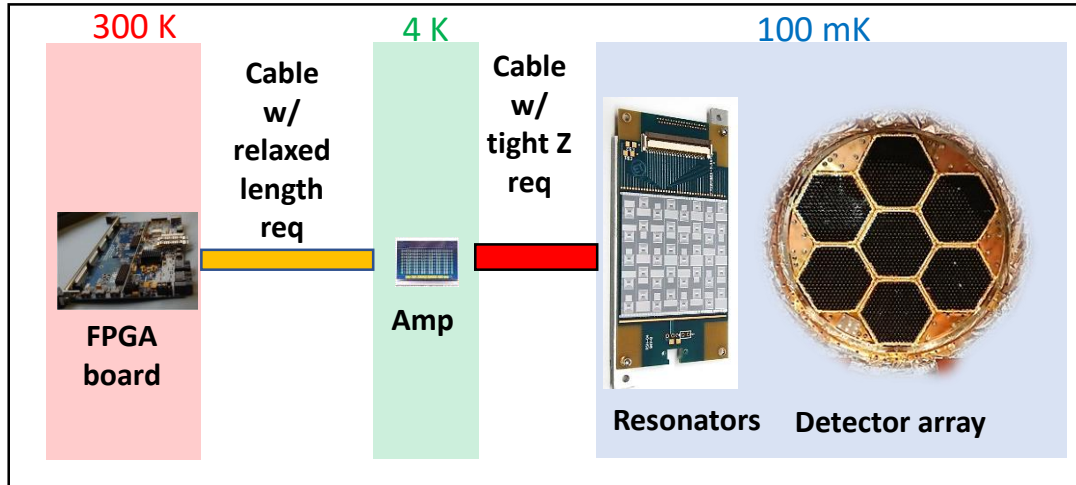
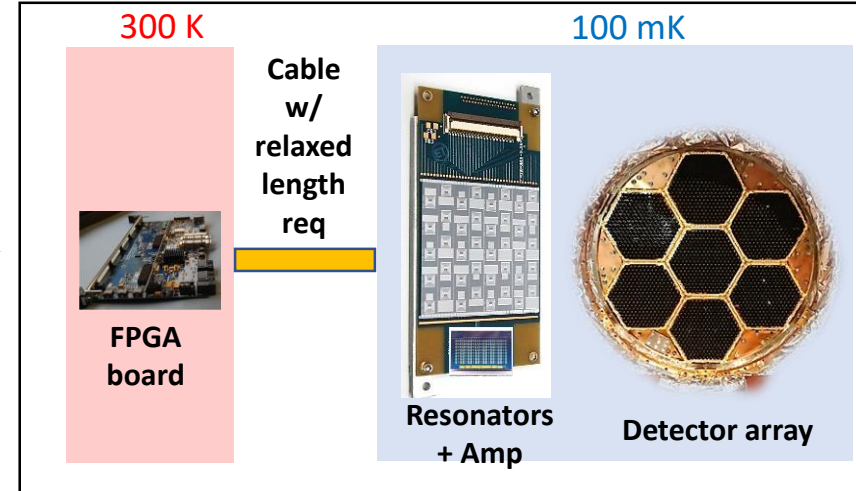


# Improving fMUX readout with mK SQUID. Work on deployable design

Current scheme (Stage-3 experiment)



New scheme



• Approach: Start with deployed system... Move SQUID from 4K to 100 mK stage

- Minor change. Same schematics, different cable length
- Lowitz , Bender et al 1907.09035
- de Haan et al 1908.07642

• Goal

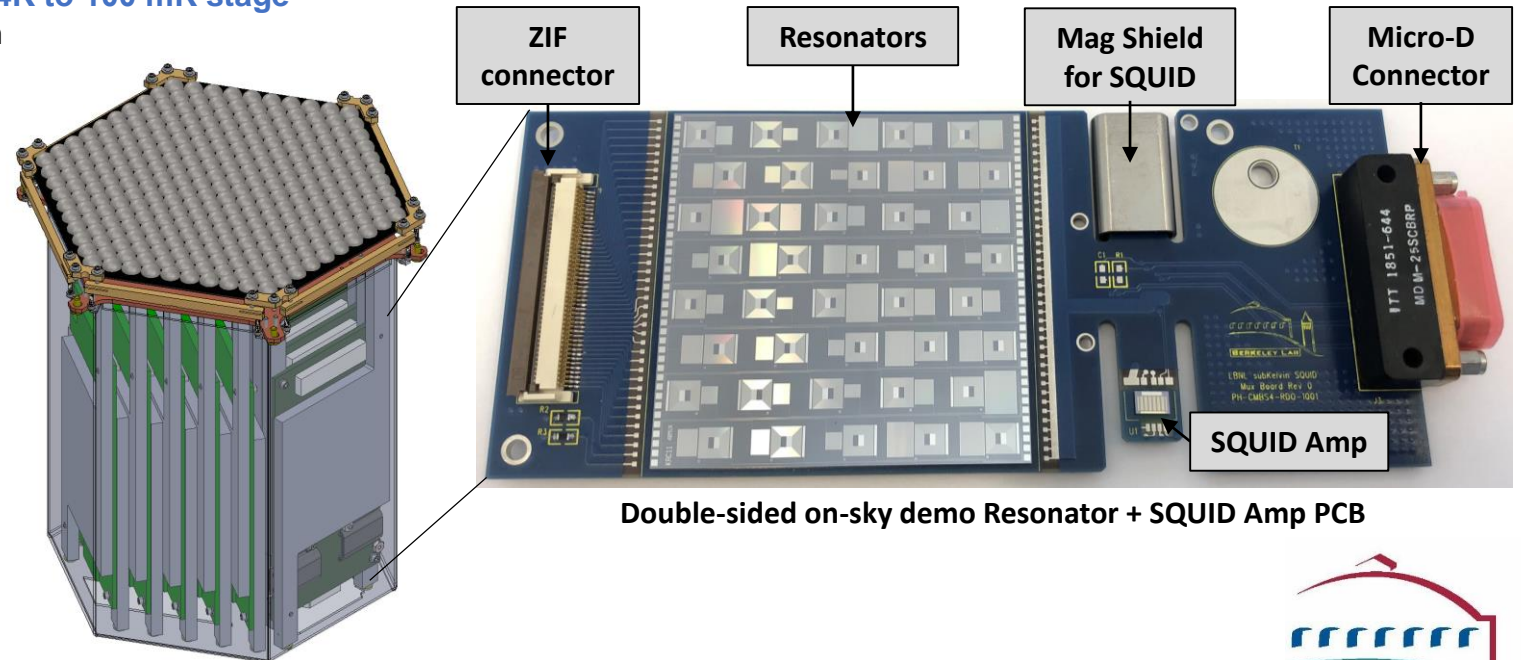
- Improves current noise margin
  - Reduce  $Z_{para}$  to operate at lower  $R_{TES}$
- Simplifies wiring within cryostat
  - Custom NbTi stripline with special solder → Twisted pair with micro-D connector

• First prototype results

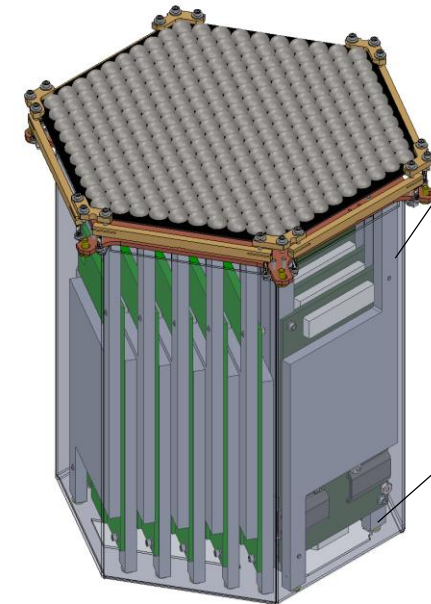
- SQUID operational at 250 mK ( $Z_t = 1500$  V/A)
- Low power dissipation SQUID (~20 nW)
- Lower residual Z (reduction of ~ x10)
- Noise < 12 pA/rHz
- Bolometers operated at lower R

• On-Sky demo module

- Demo module to be deployed with PB-2c receiver
- Compatible with existing detector module
- Cryostat is compatible between new/current system



Double-sided on-sky demo Resonator + SQUID Amp PCB



On-sky demo det module design