

Weekly Report

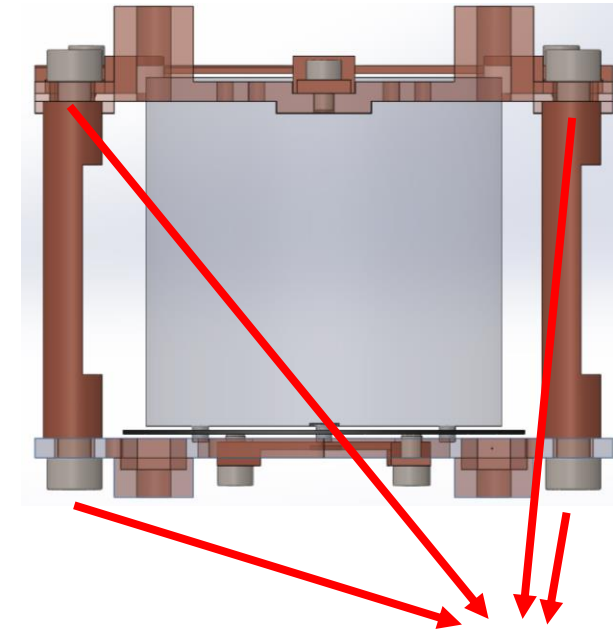
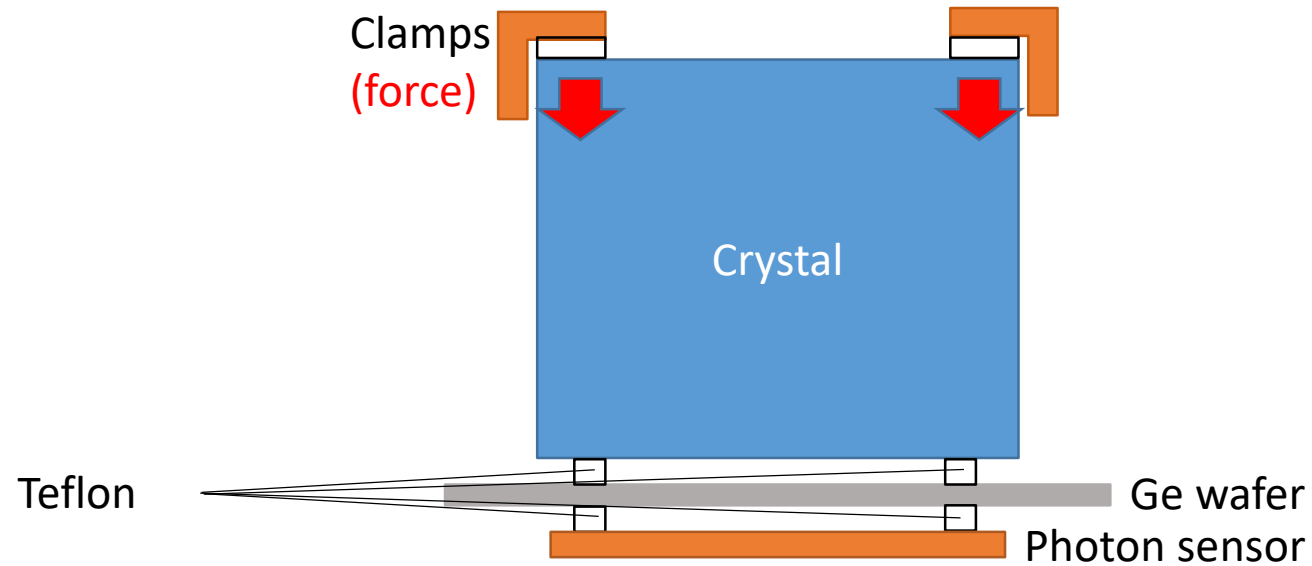
2019-11-01

Kim, Hanbeom

Current Status

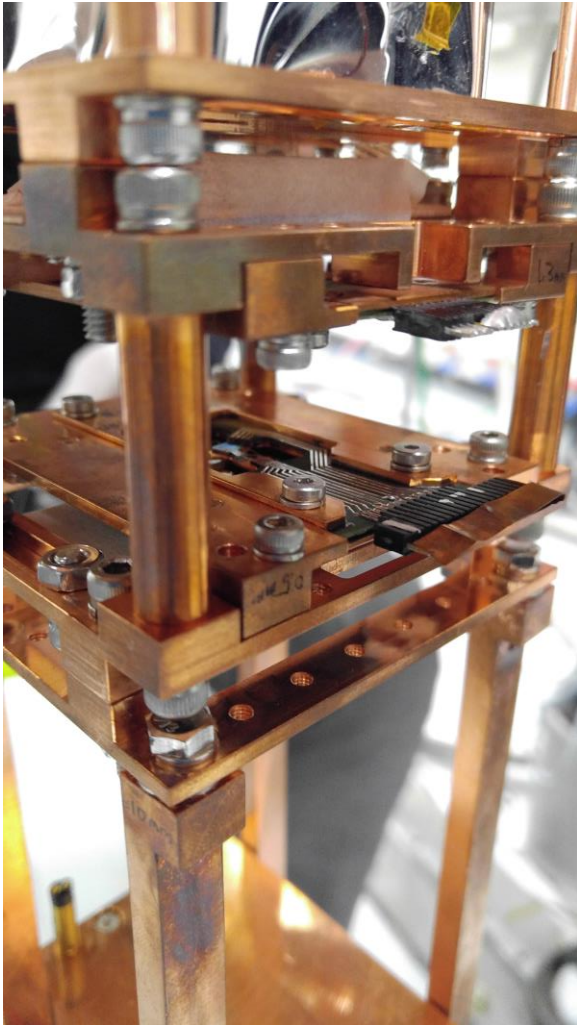
1. Detector design re-test + α : IBS Underground refrigerator
2. Another idea on design
3. AMoRE-I Preparation

Detector Design re-test



In the last test, there was large temperature fluctuation, expected to be caused by mechanical vibration.
(lack of washers)

Detector Design re-test + α



+ SG Kim's R&D experiment
To compare Ge & Si wafers for phonon sensor

Because of SQUID malfunction problem, the refrigerator installation was delayed about 2 weeks.

Detector Design re-test + α

10/18: Pumping & Cooling began (2 weeks ago)

10/19~21: LN2 precooling (end at about 80 K)

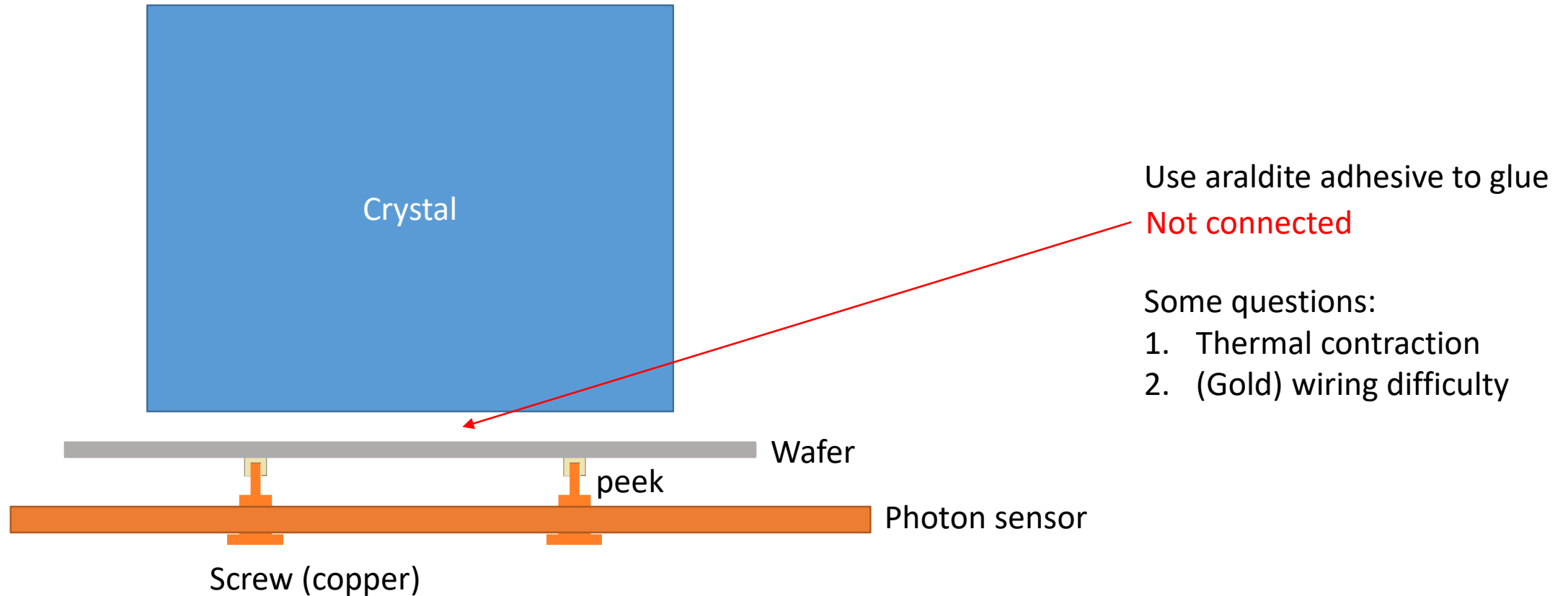
10/23: Zero bias cooling

10/28: SQUID tuning & started to give heat to STILL (~50 mK)

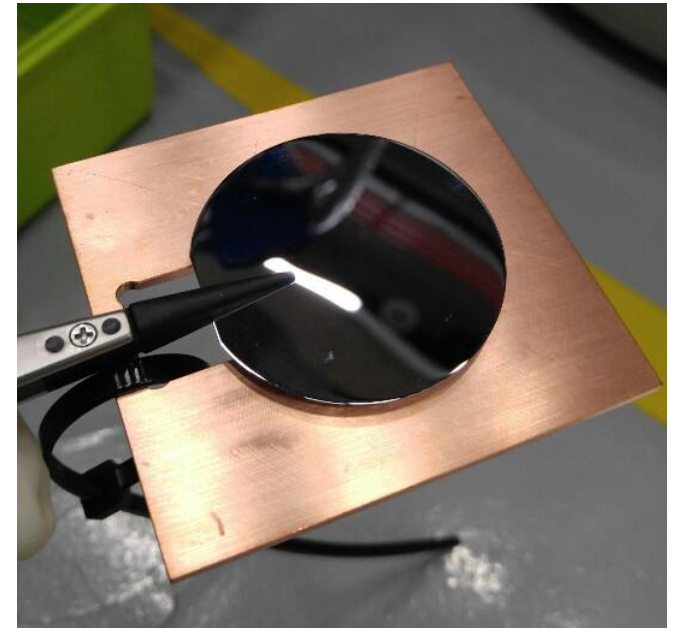
Now: ~ 25 mK

We hope to reach a level below 20 mK as before, but it seems does not work well.

Another idea on design



Another idea on design – thermal contraction test



Another idea on design

- Will be tested in ADR at IBS w/ gamma source
- ADR is newly wired and going to be tested, so the installation is expected to be next week.

AMoRE-I preparation

- Students are working for production of detectors.
- 1st: Phonon Sensor making
 1. Clean the Cu phonon sensor holder
 2. Solder Cu lines on Kapton PCB w/ clean Pb
 3. Attach PCBs w/ clean Pb on the Cu holder
 4. Clean the whole holder again

AMoRE-I preparation

- Cu working process:
 1. Acetone – 30 min.
 2. Citranox solution (1~2 %) – 1 hour. : seems to damage the Cu holder and soldered Pb
 3. Acetone – 10 min.
 4. IPA – 5 min.
 5. DI water – 2 min.