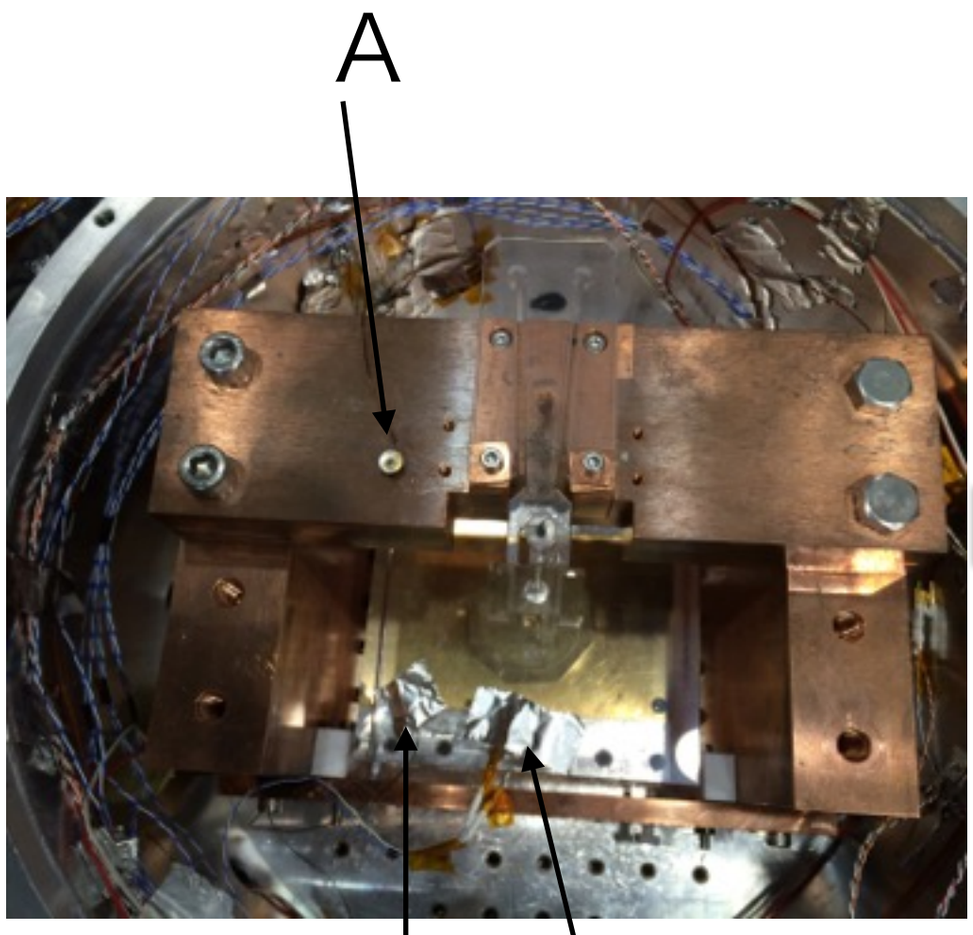
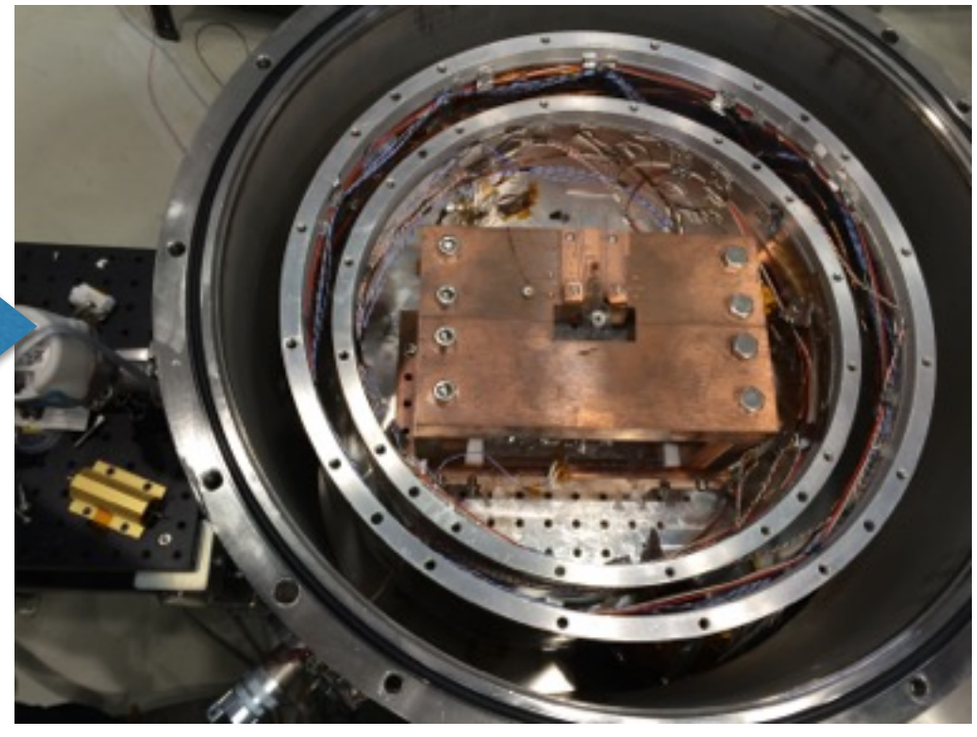
My work in 2015

12-1

Hiroki Tanaka

Cool down(first)





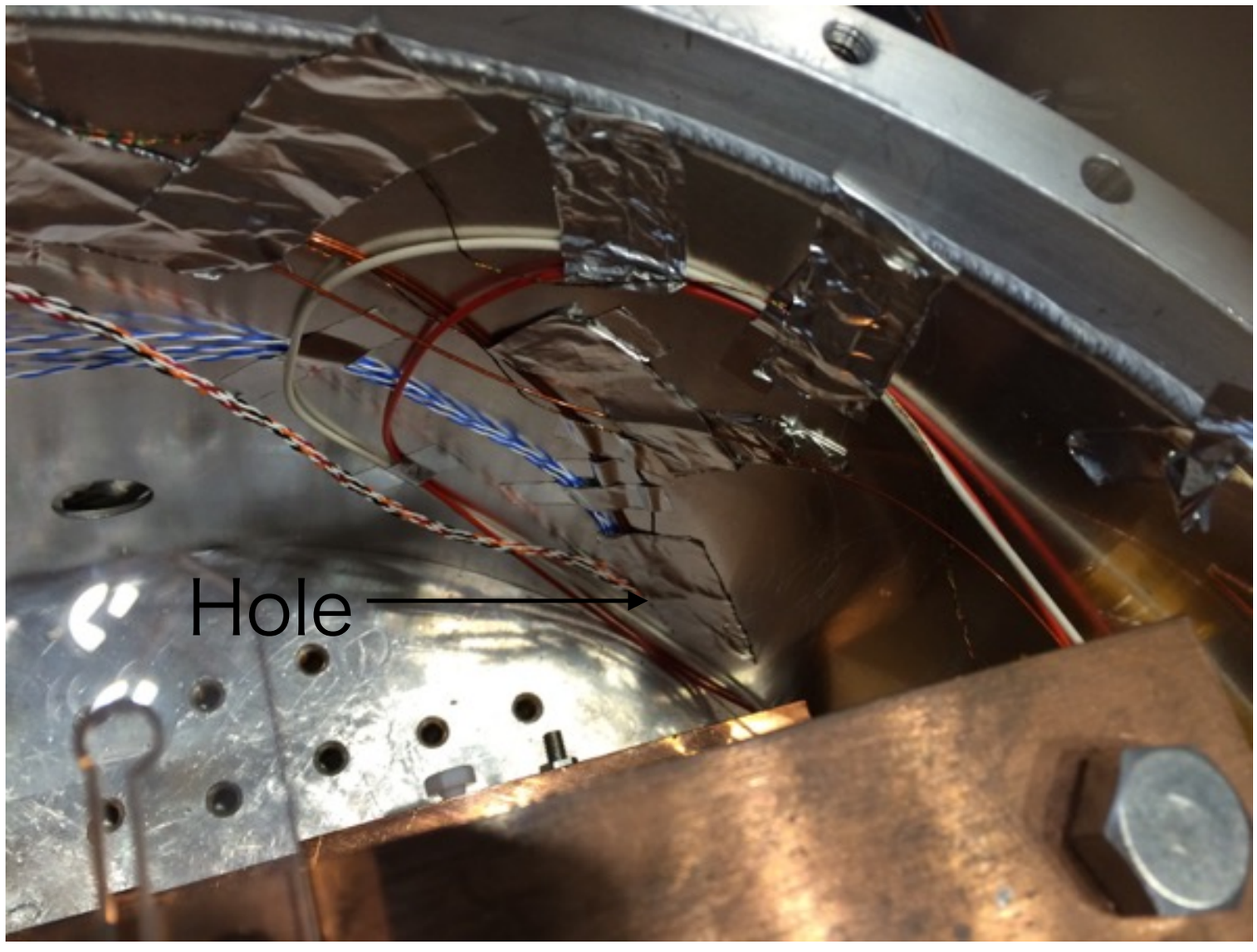
Cool down （first)

- A(blade)…5.5K, D(mass)…32.0K
- D stopped at 32.0K because of the thermal radiation.

Cool down

- There are seven holes on the cryostat.
- We closed five holes with the aluminum tape (Two holes must be open for the laser beam for Q measurement).

Cool down(second)



Cool down(second)

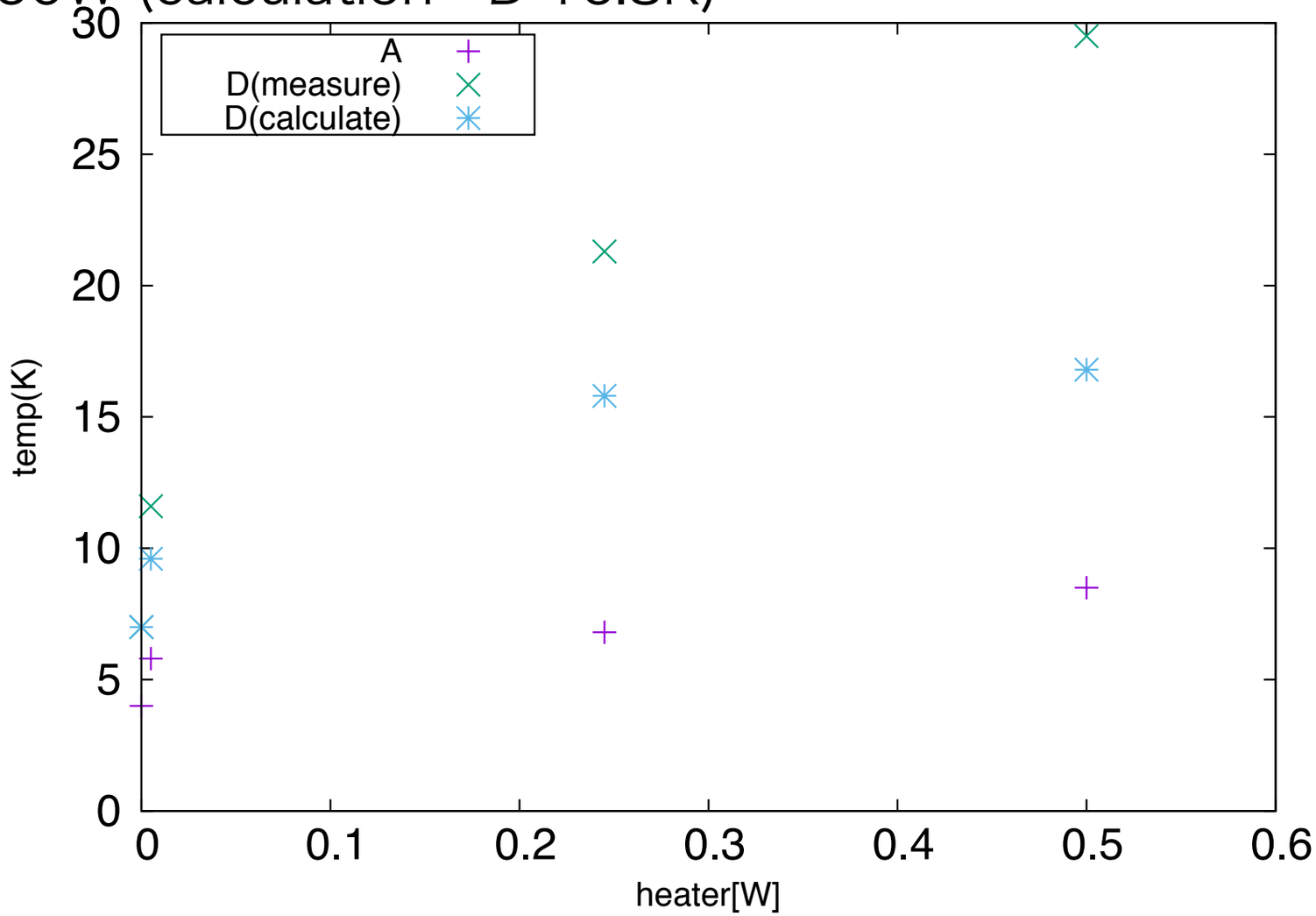
- A reached 4K and D reached 7K.

Calculation

- We calculated the ideal temperature of D.
- We assumed there is only a sapphire fiber between A and D.
- We know the thermal conductivity of sapphire, so we calculated the thermal resistance.

heat load test(second)

- A1.8K D4.6K…0.045W (calculation…D 9.6K)
- A 2.8K D 14.3K…0.245W (calculation…D 15.8K)
- A 4.5K D 22.5K…0.50W (calculation…D 16.8K)

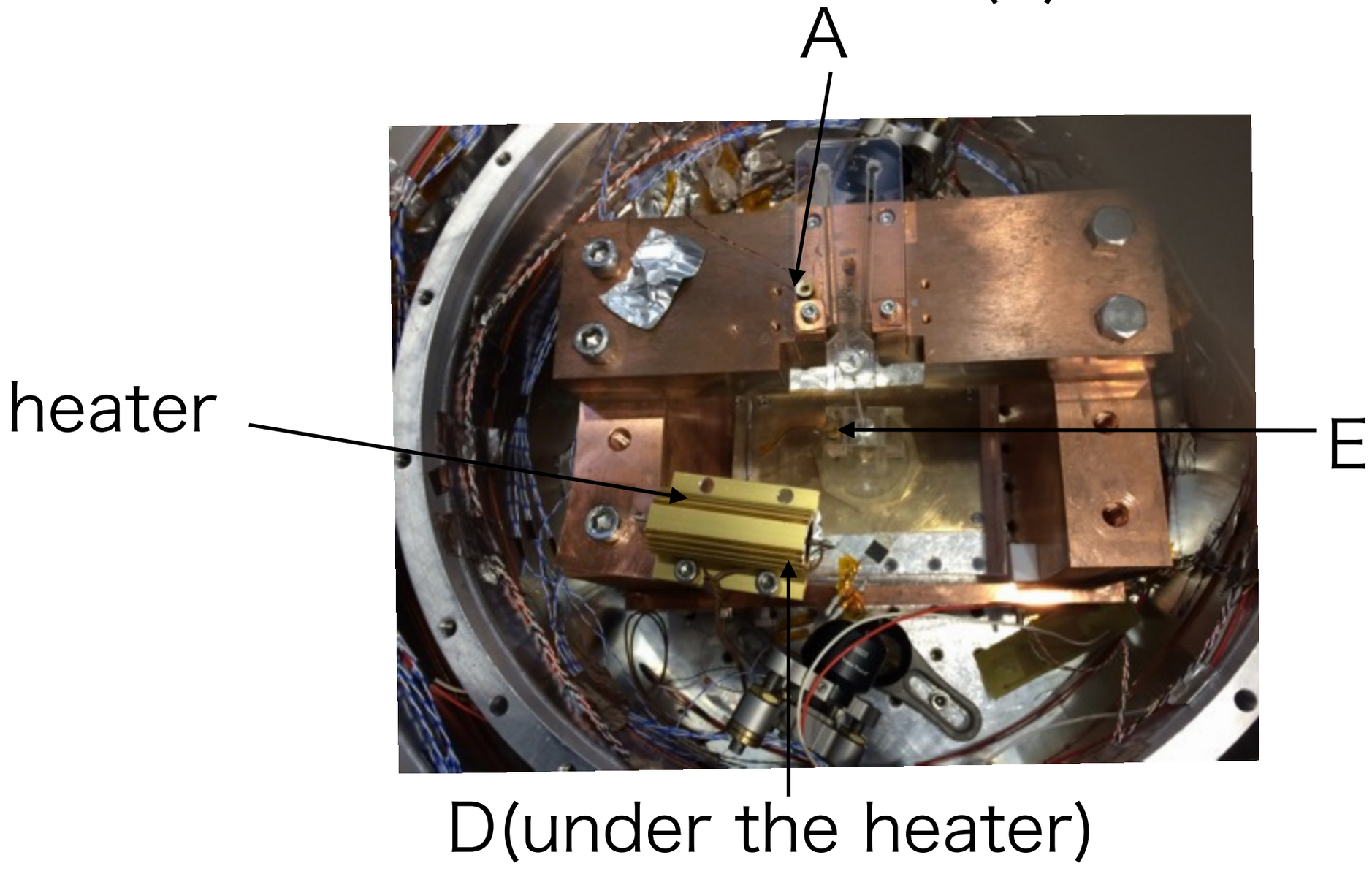


Cool down(second)

- We want to know which part has much thermal resistance (Indium, mass hanger, the blade…)

Cool down （third)

- We added a thermometer(E) and a heater.



Cool down(third)

- Now the cryostat is cooling down.

Ansys

- Violin mode of one-fiber prototype…1700Hz

Q calculation

- Dilution factor(violin mode)=0.81 using the thesis.

Investigations of the dynamics and mechanical dissipation of a fused silica suspension

Future work

- We will start the heat load test on Friday.