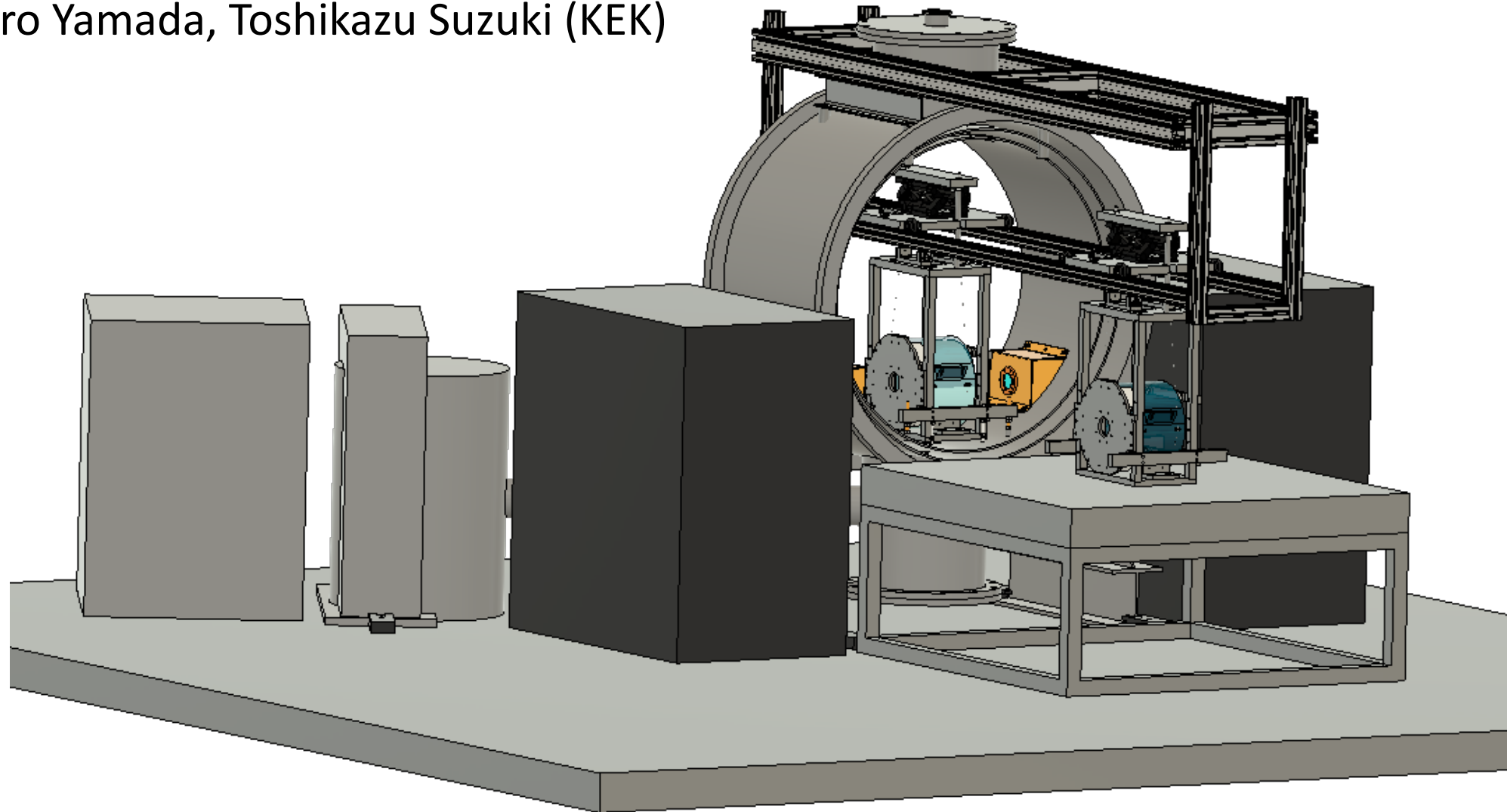


# Q measurement for Sapphire mirror

Tomohiro Yamada, Toshikazu Suzuki (KEK)



2023.09.21

# Updates

Previous meeting

## Future works

- Improvement of EQS →
- Electrode design →
- Gluing system →

Considered

Considered

Considered roughly

## Comment

- Possibility to use splits of the ear for the wire loop →
- Wire breaker →

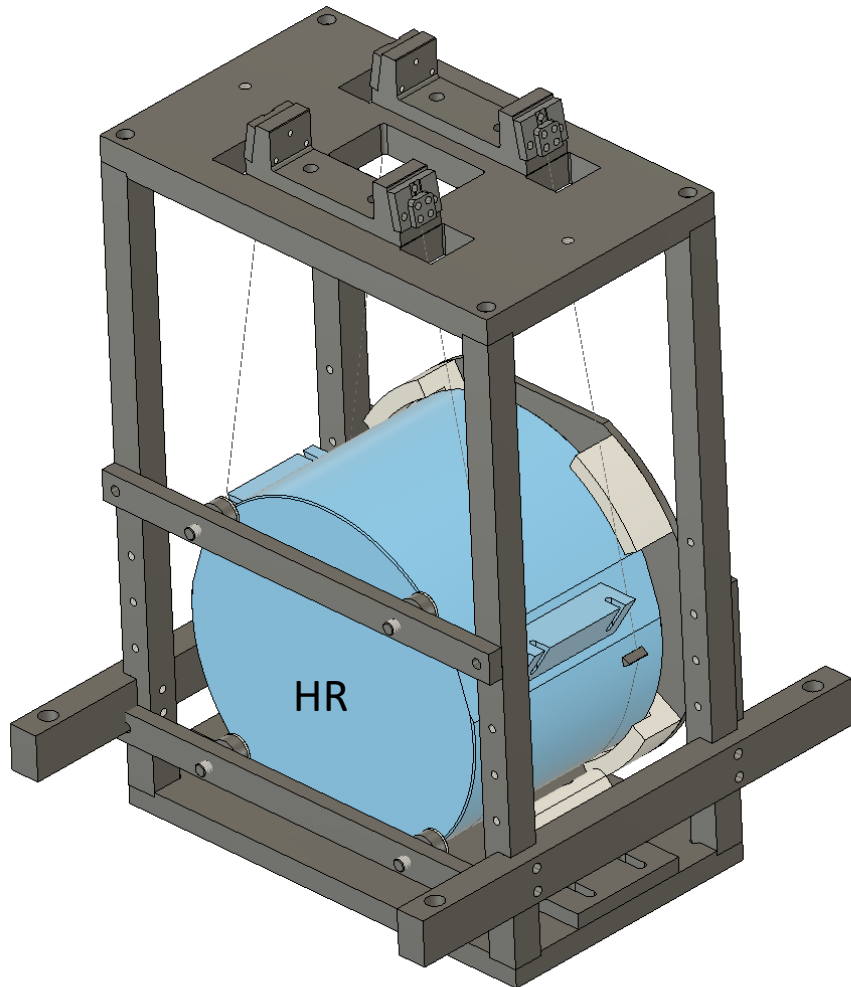
Considered but seemed not good option

No time to discuss with Hirata-san but one more breaker will be added at the bottom. Material: SUS316L

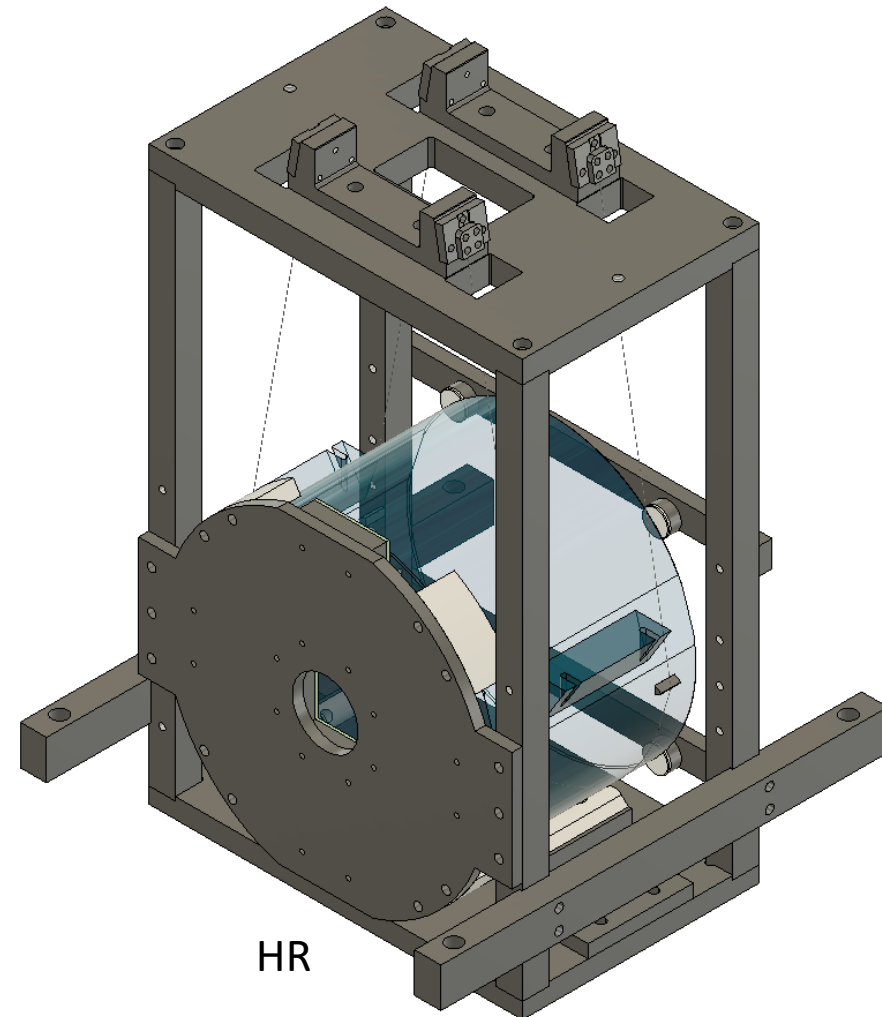
# Improvement of EQS

I told you a concern on pushing HR surface with screw pushers.  
-> Structures for HR and AR were swapped.

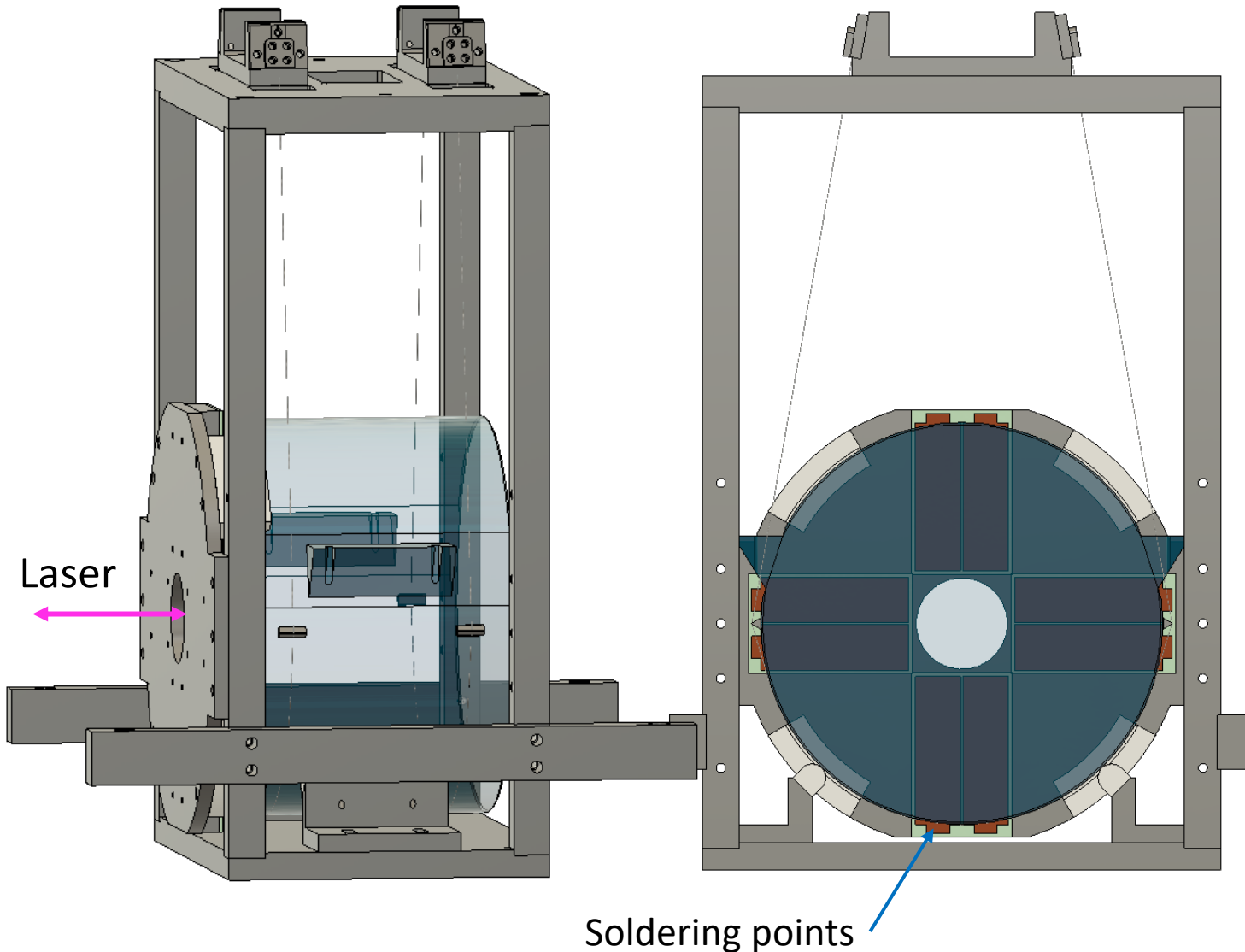
Previous



New



# Electrode design

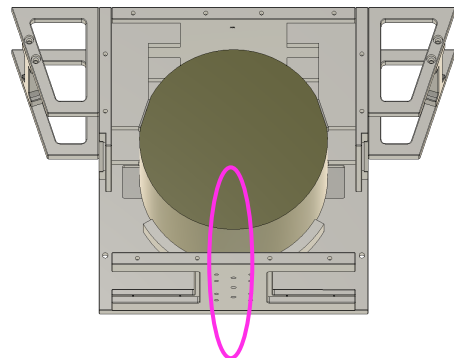
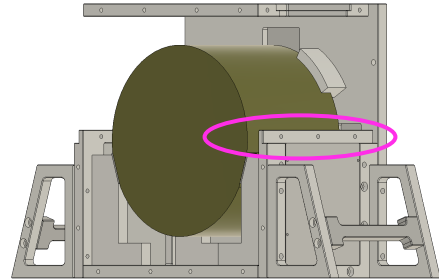
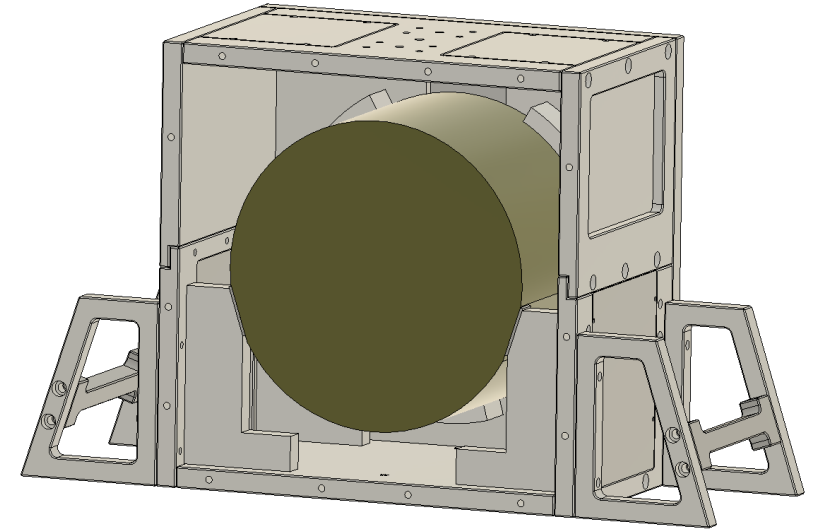


Electrodes are now placed on HR side. Because of space issue and for the possibility to excite several resonance modes, four electrodes were adapted. Laser beam can hit inside the aperture of  $\phi 50\text{mm}$  at the center. Soldering point of the electrode is outside of the mirror diameter.

Detailed geometry of the electrode will be decided after discussion with fabrication company. (I don't consider in-house fabrication because of limitation my working time for this task and disposal process of the chemical.)

# Gluing system for wire breakers

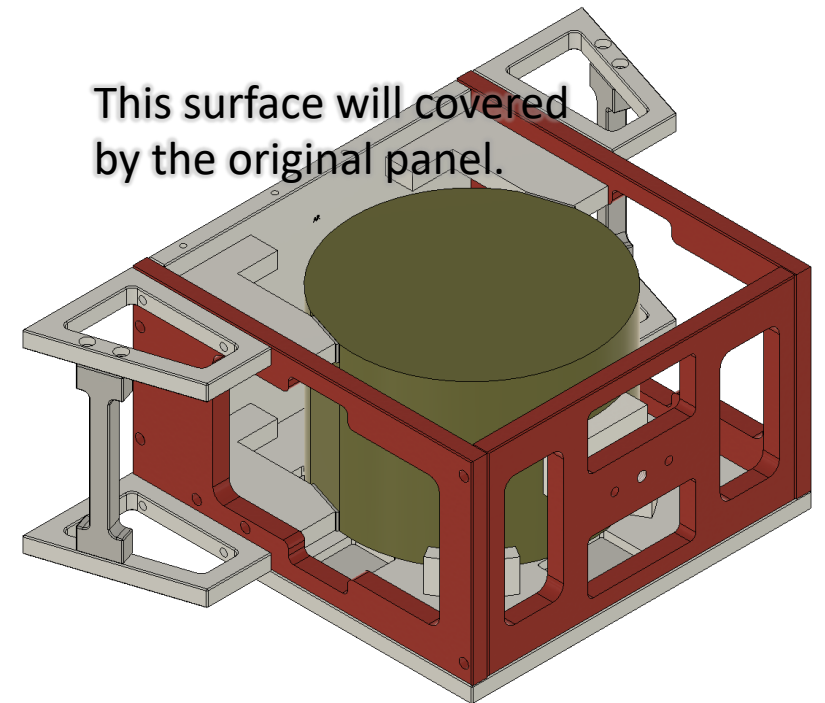
The easiest and most reliable solution to glue wire breakers is to use HCB box because everything is defined by side cuts of the mirror. The current HCB box, however, is not suitable for breakers' gluing because of some obstacles in front of gluing points.



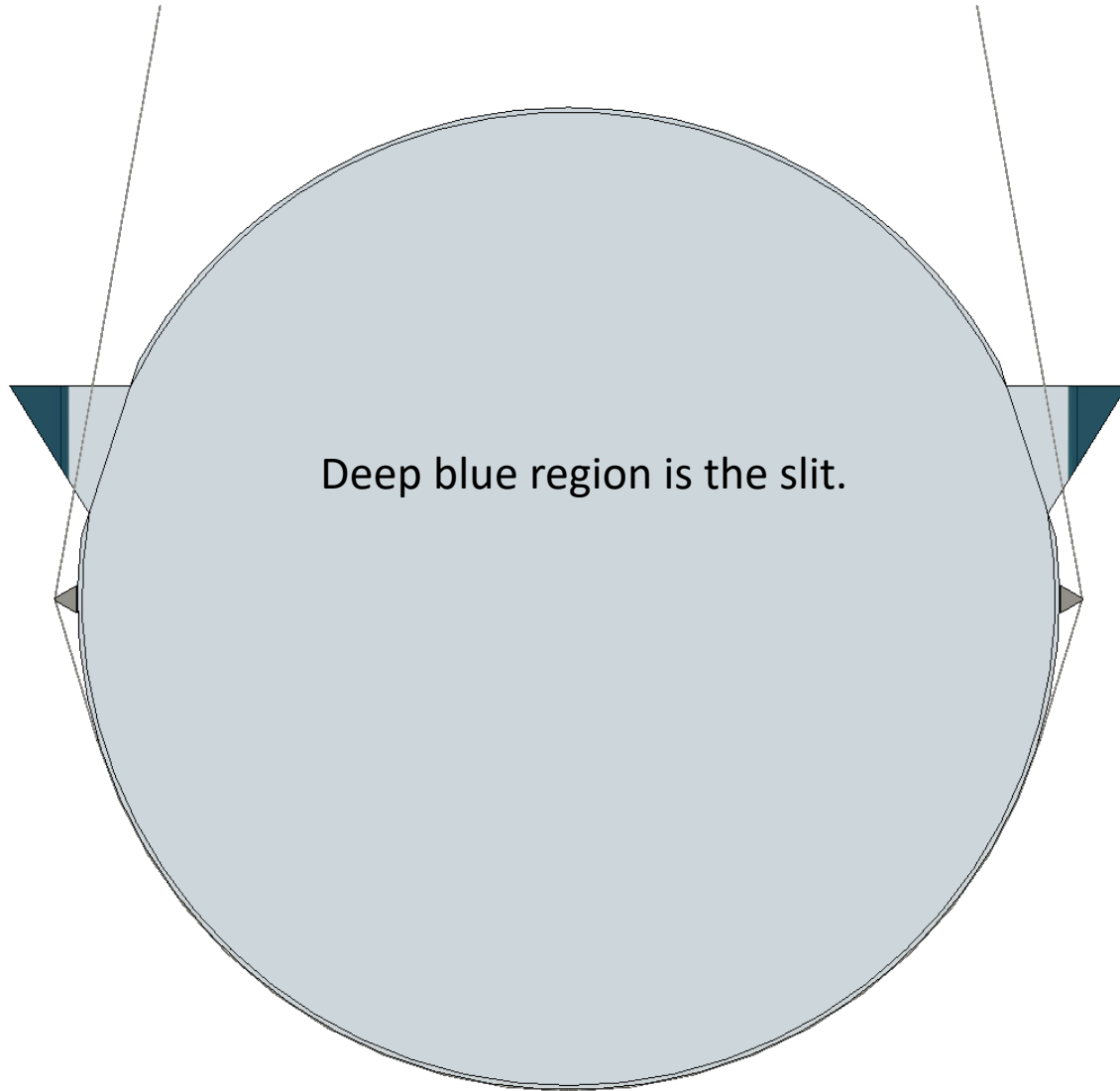
We propose to make new three plates (shown by red) for side panels and the lid to make spaces for gluing jigs.

Gluing work will be done on the optical table. Gluing points will be decided by screw holes' position of the optical table and "pins".

This surface will be covered by the original panel.



# Possibility to use the ear's split



Two concerns:

- looped wire cannot be squeezed at the top not to touch ears.
- To squeeze wires, side wire breakers must be very big. (Current size: 6\*6\*6mm triangle)

Due to above reasons, we don't want to choose this option.

# General question

- Working area and experimental area are not clean room. Is it OK for spare sapphire mirror and HCB box?

# Further works

- We will ask quotation to the company in Tsukuba for machining components.
  - Suspension
  - New plates for the HCB box.
  - etc...
- We will summarize purchasing items and get quotation.
- I will send them to Miyoki-san and all of you by Oct. 6th Friday.