

Status Report

-Rishabh Bajpai

Summary

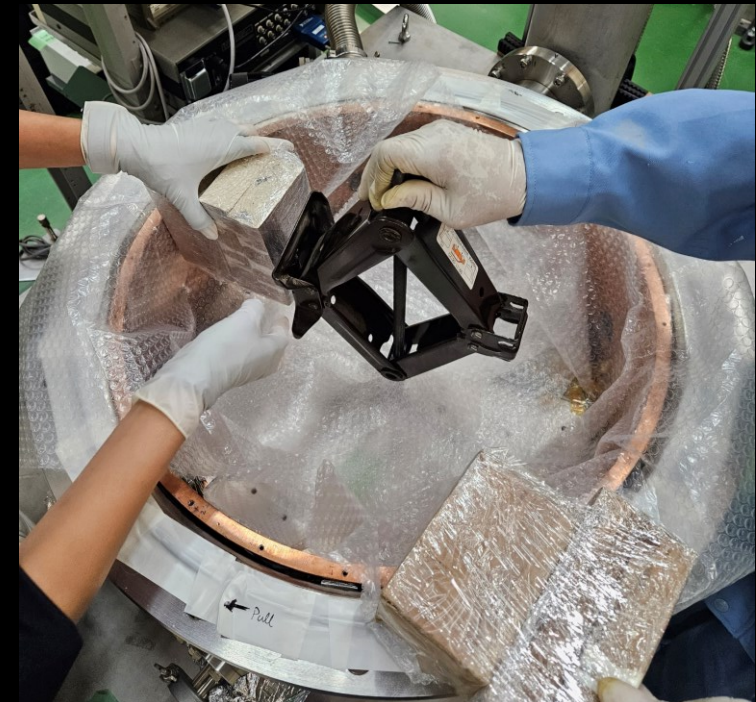
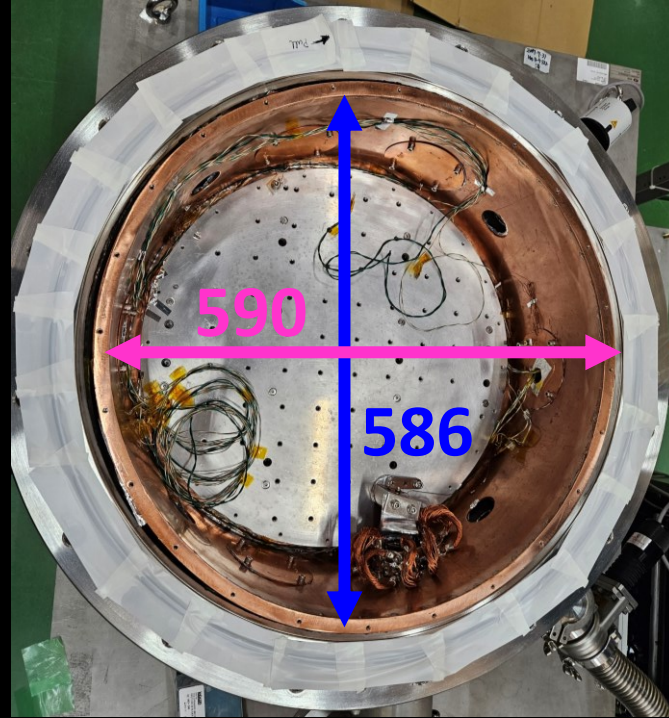
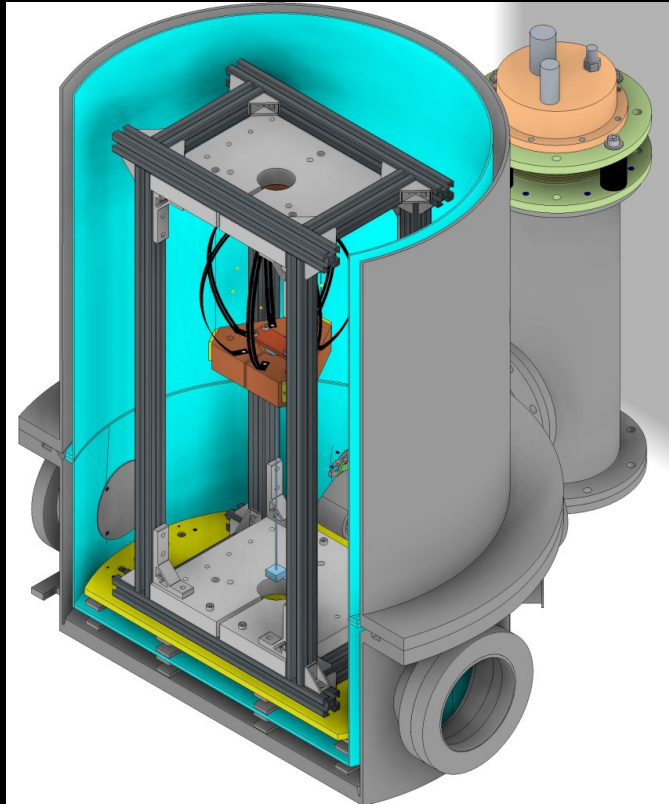
- Suspension ordered to KEK machining center.

Issues:

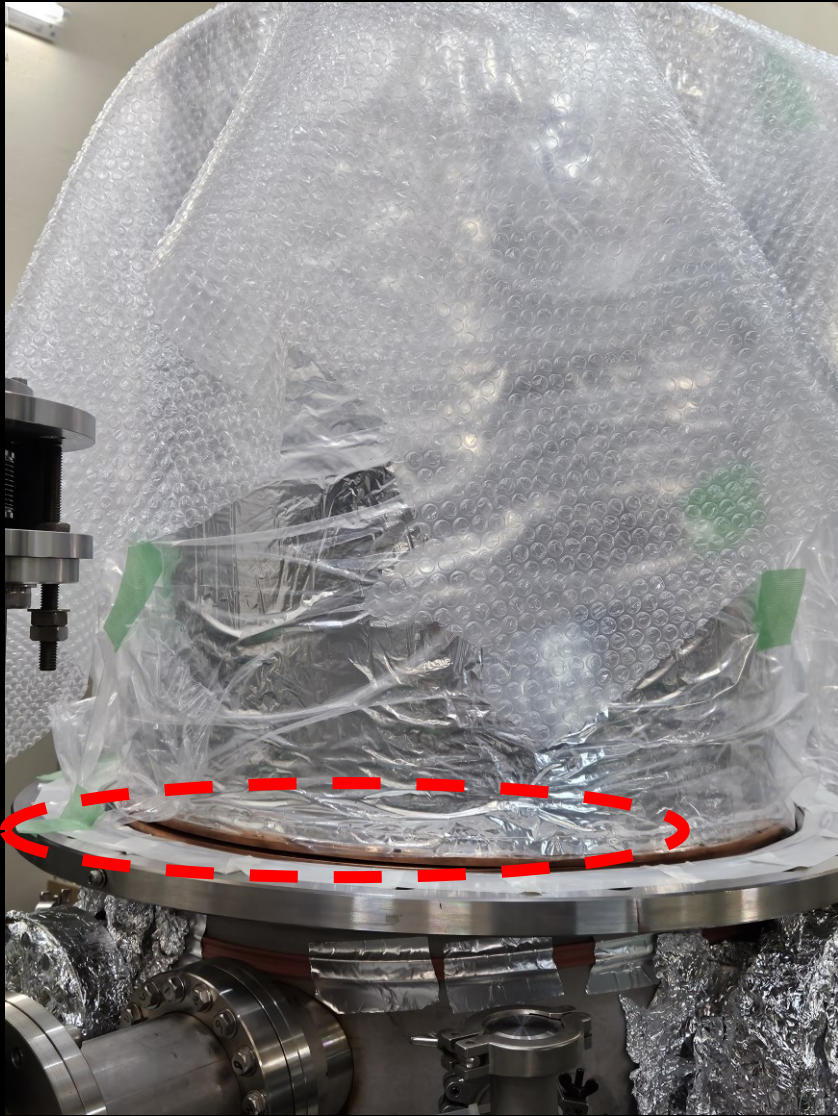
- Radiation shield deformation:
 - Radial
 - Flange surface
- Electrostatic actuator?
- Outer frame to be made by ourself. **Might change it to AL.**

Cryostat

Both top and bottom shield are radially deformed by 2-5 mm.

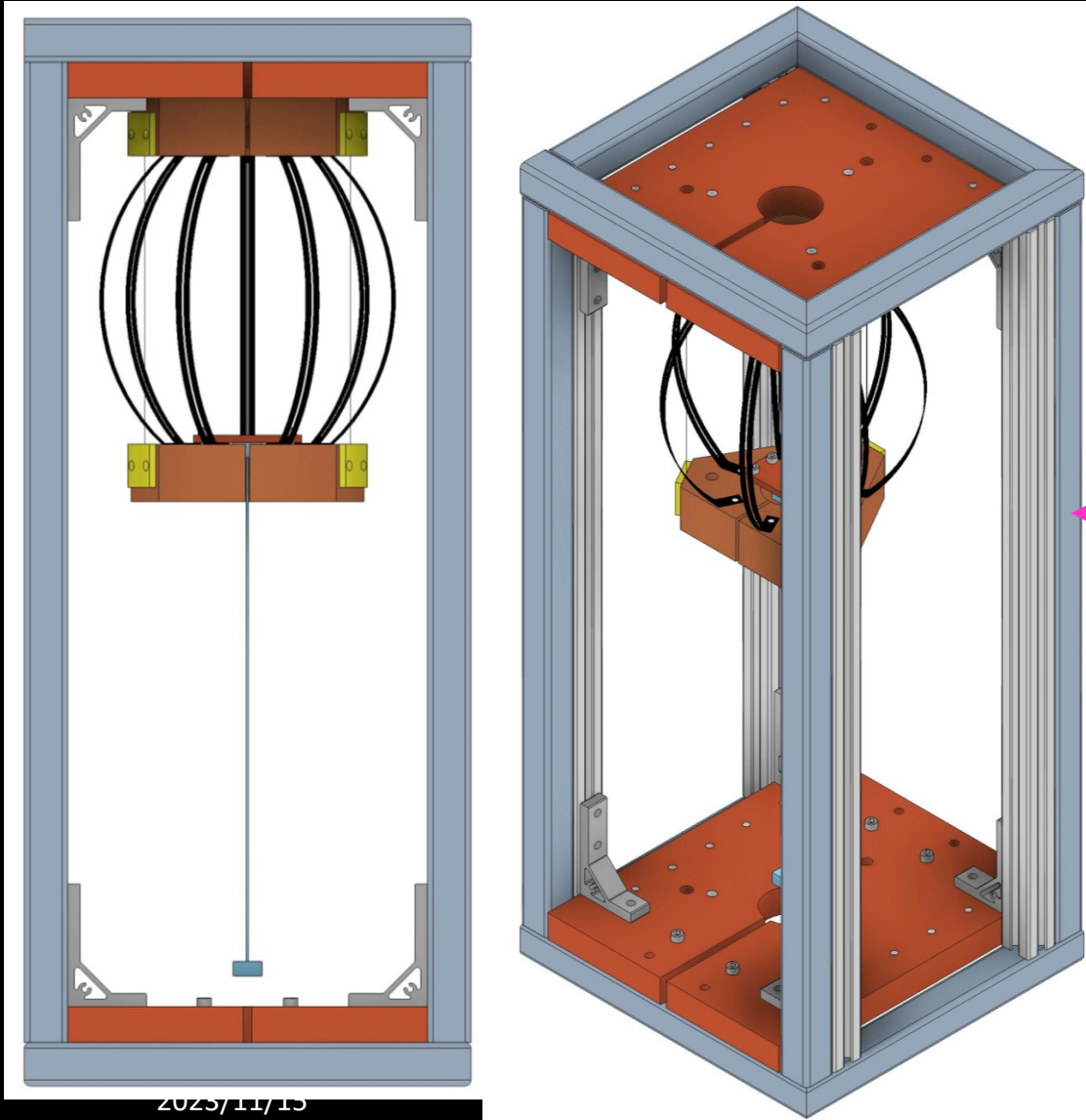


Should be able to fix it by increase hole size and re-deforming



The flange ring is deformed 2-3 (ish) mm. Put multiple indium foils?

Suspension

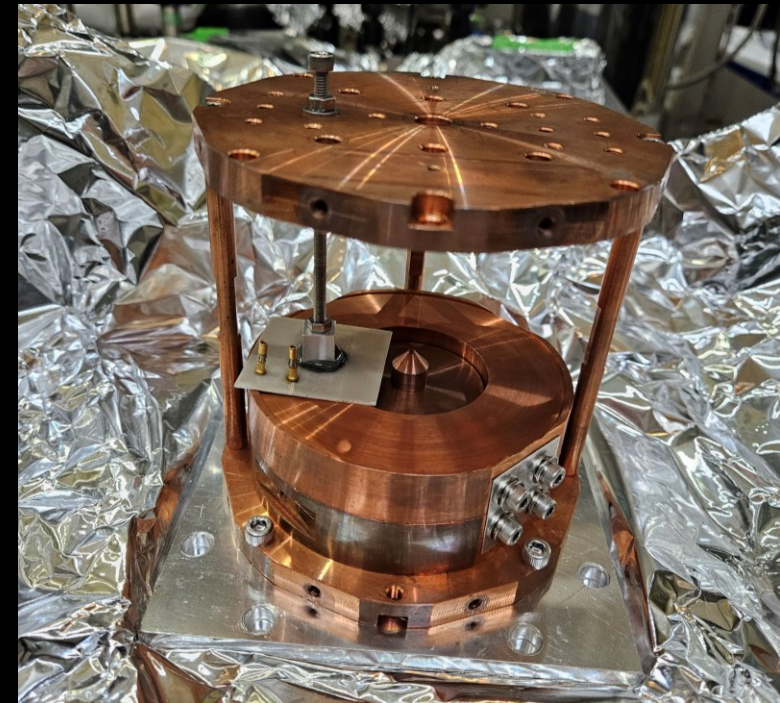
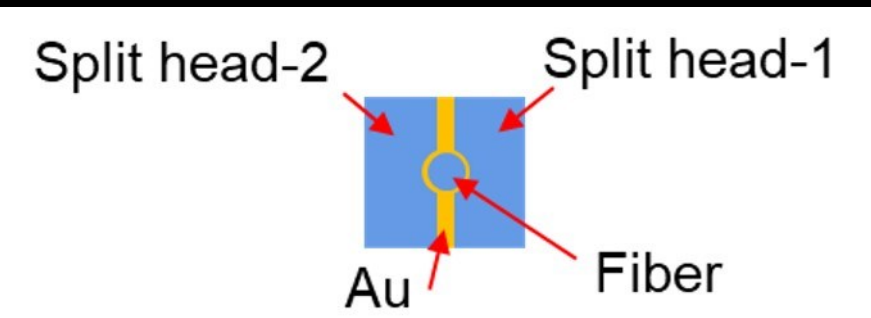


Currently using SUS square pipe. Has to be welded not enough angular precision. So, replace with setup that can be bolted:

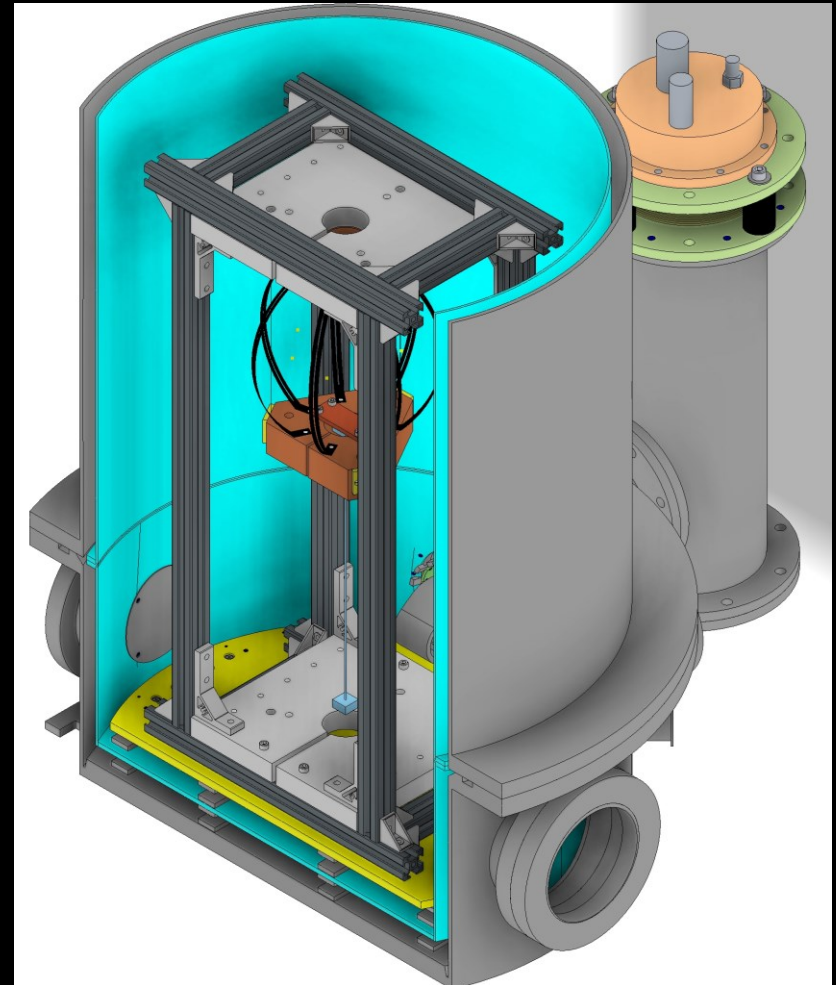
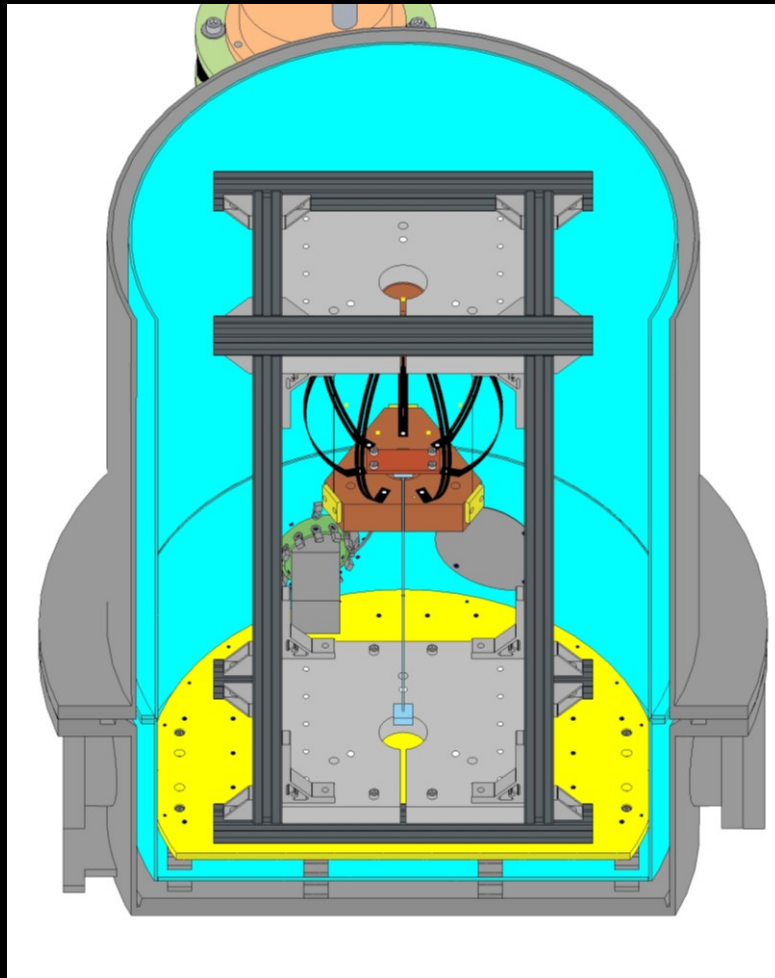
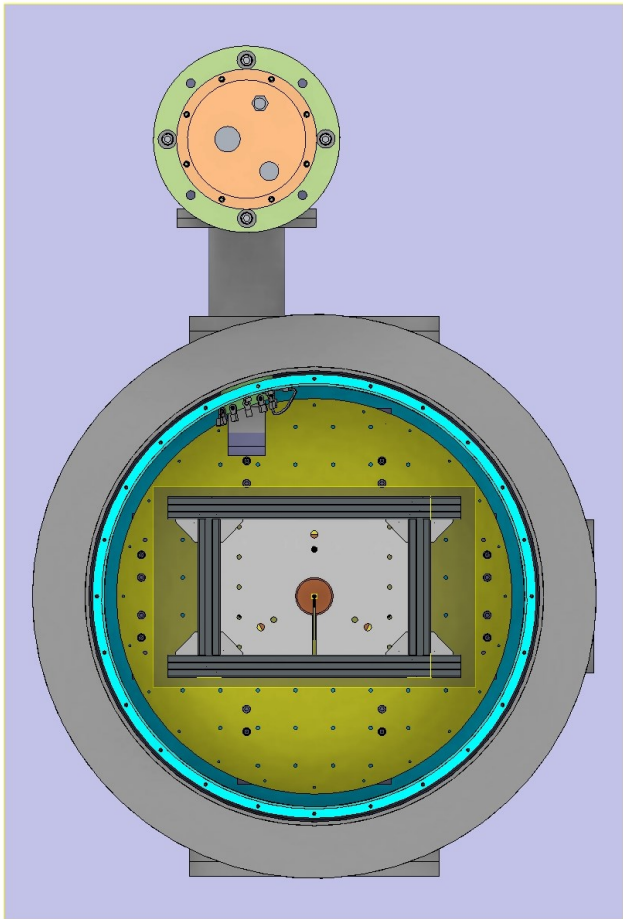
- SUS column (frame can be bolted). Weight: 38 kg
- Misumi Al frame. (convenient)

Miscellaneous

- Electrostatic Actuator: where to purchase/ how to fabricate in house.
- Bondings: Any suggestion to bondings that can be measured? Atomic diffusion bonding requires larger fiber diameter.



OLD SLIDES (backup)



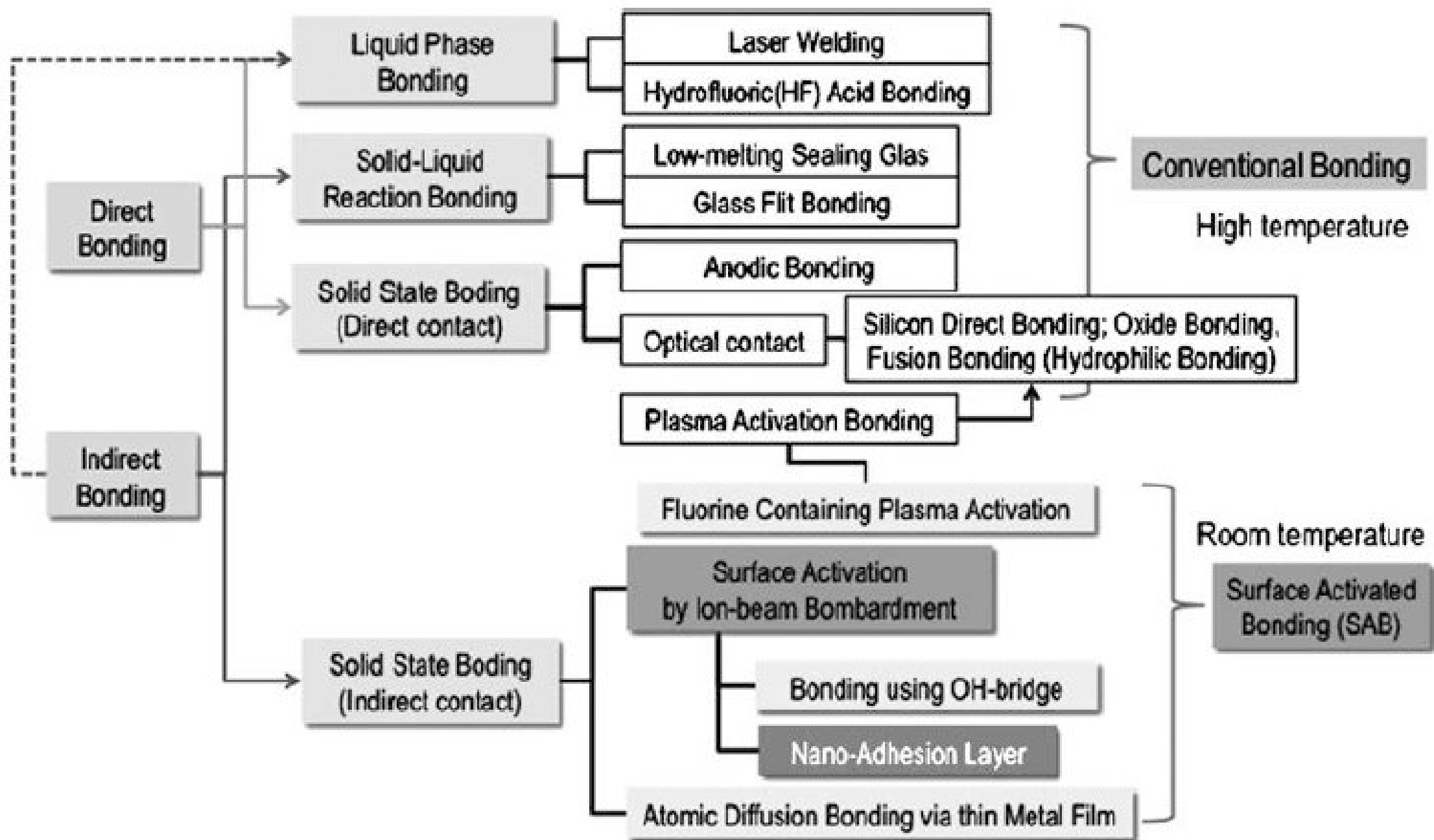
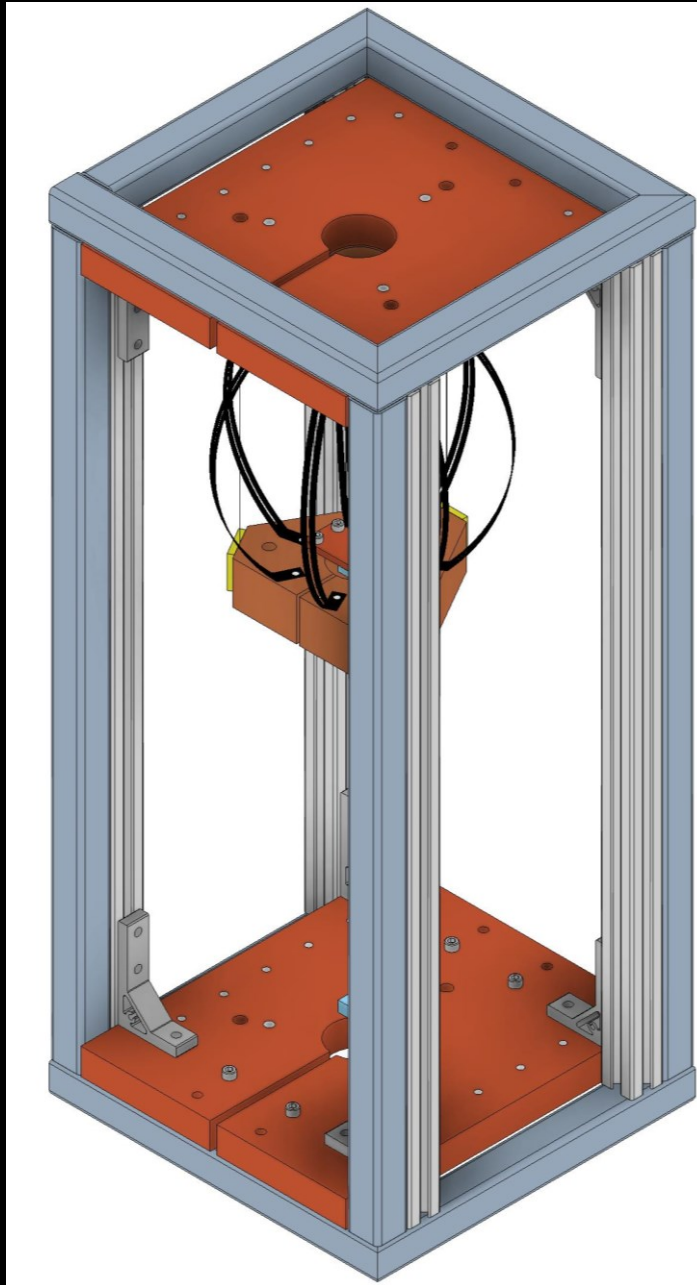
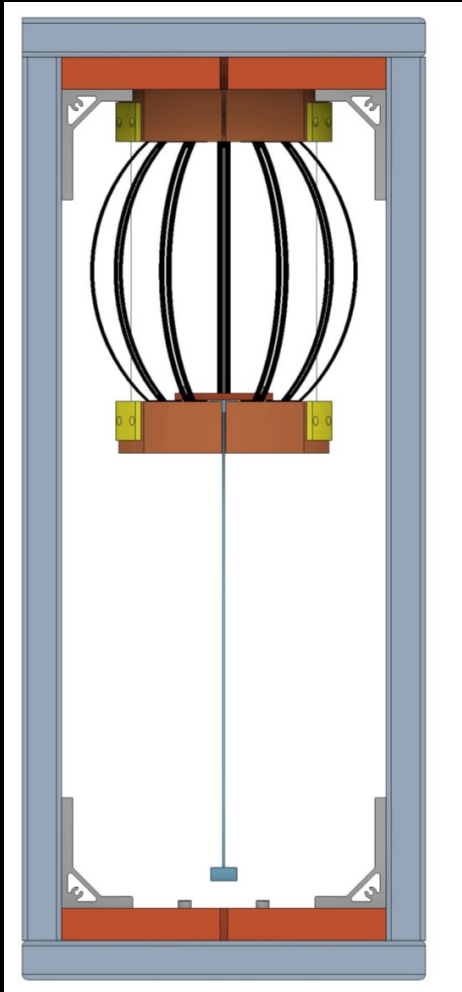


Fig. 4 Bonding methods for ionic crystals and glasses.

Sensor



Setup

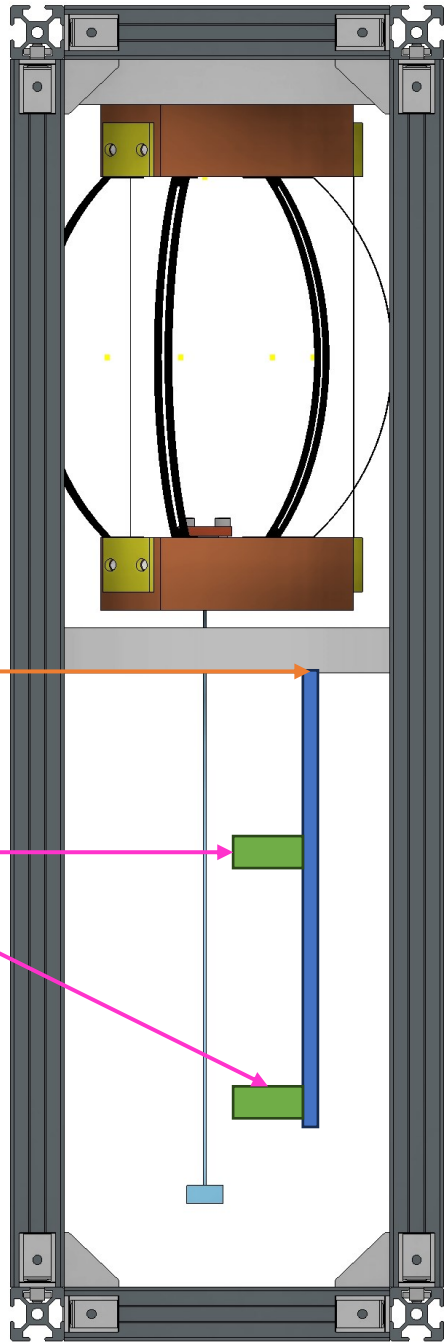


- Will use 3 wire setup.
- Have cone shape one side and through hole on the other side.
- Measure Q of small fiber first to see if 3 wire can measure high Q .
- If yes measure KAGRA size fiber. If no, consider improvements.

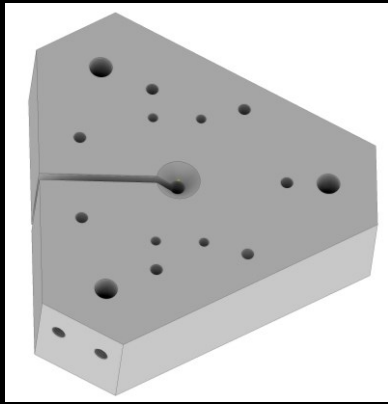
- *not finished assembly.
- But plan it to use 2 actuator in middle and bottom.

Post bolted to the bottom of earthquake stopper

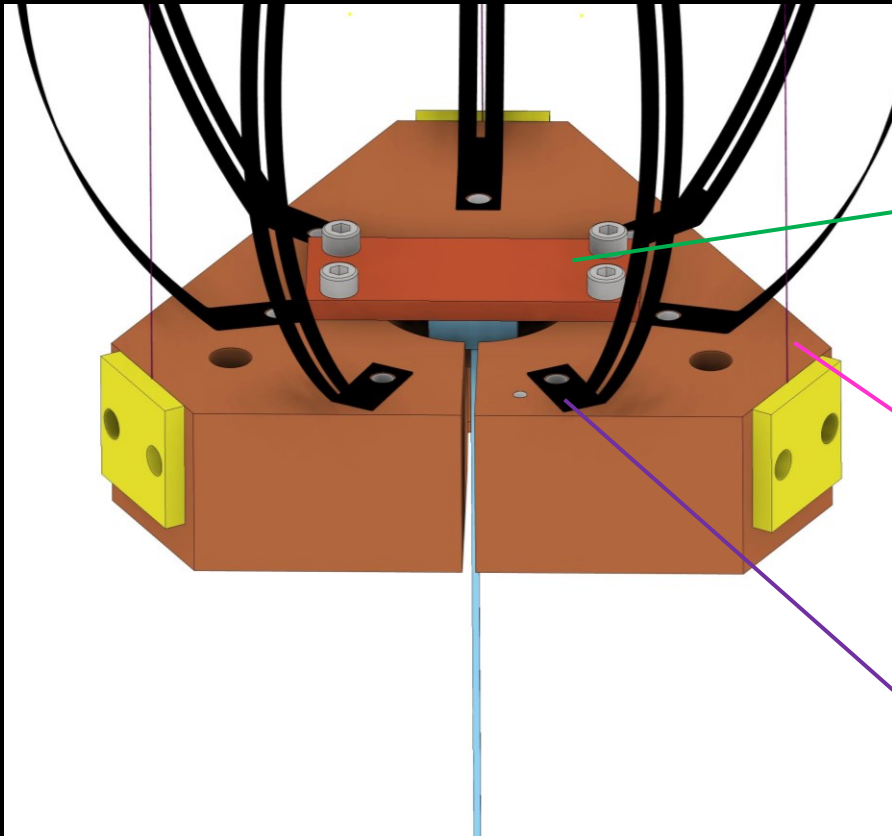
Act.-1/2



Setup



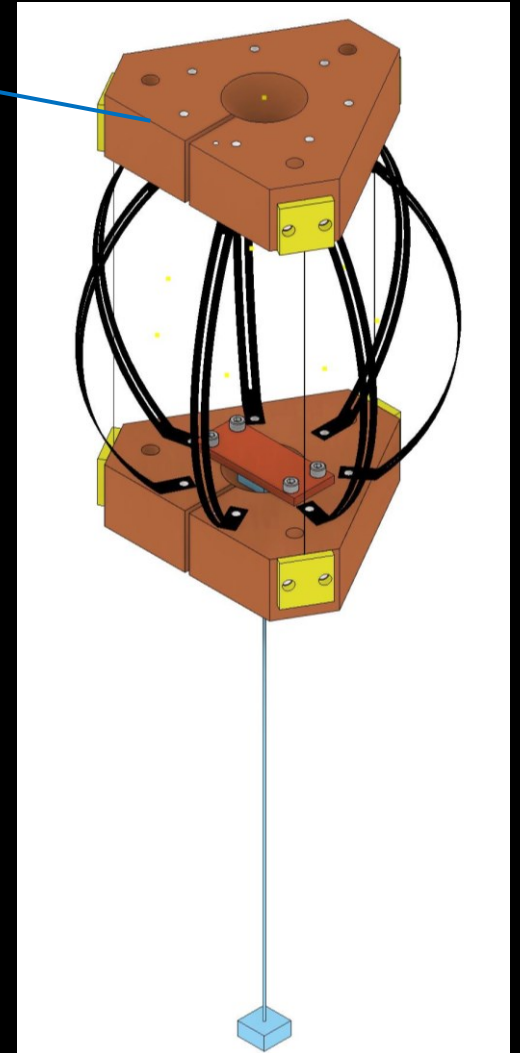
Same as bottom one. The other side has smaller countersink for smaller fiber



Countersunk (cone) for point contact with copper plate for clamping.

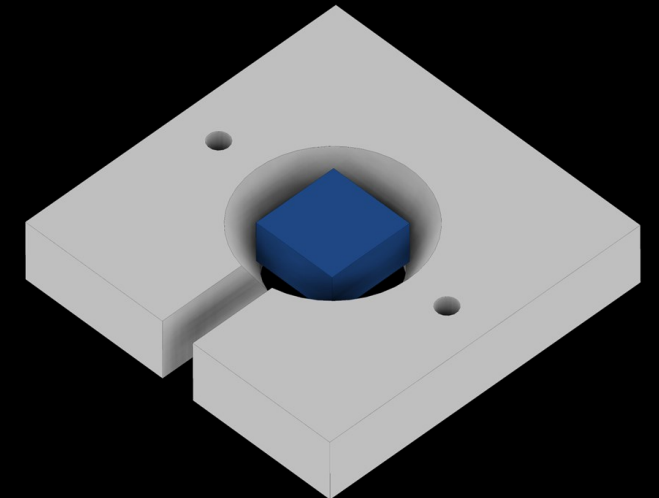
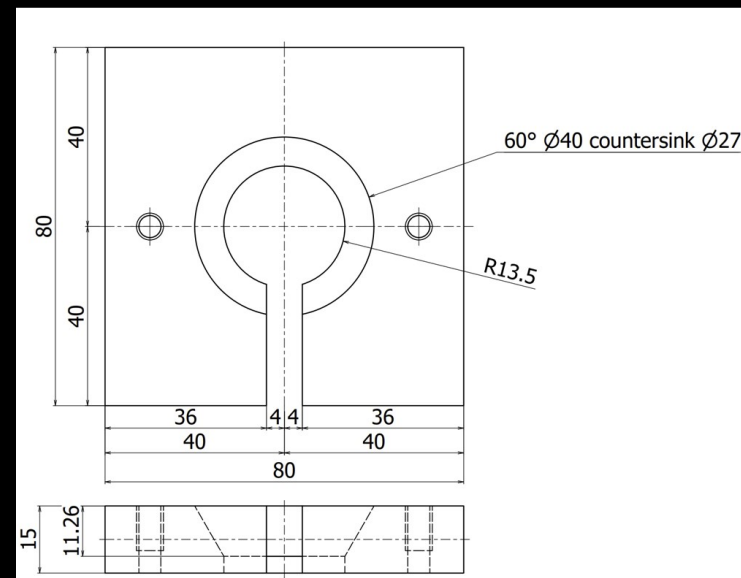
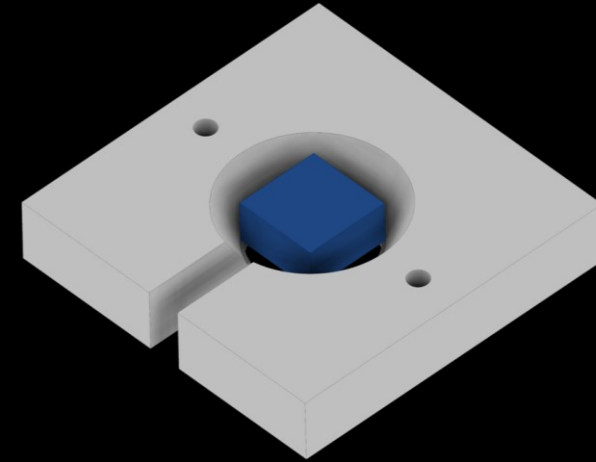
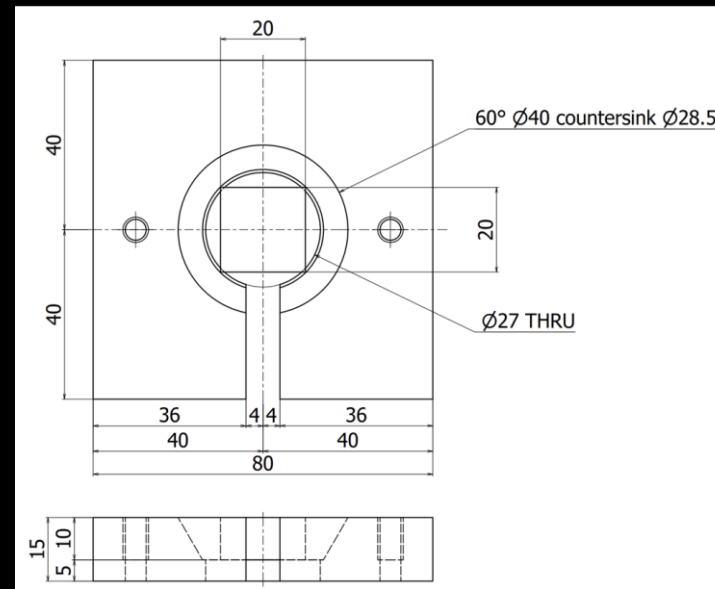
Tungsten Wire : Φ 0.15 mm
Safety factor: 3.4
Length= 200-250 mm

Heat-link: Al sheet
0.5 mm thick at KEK?

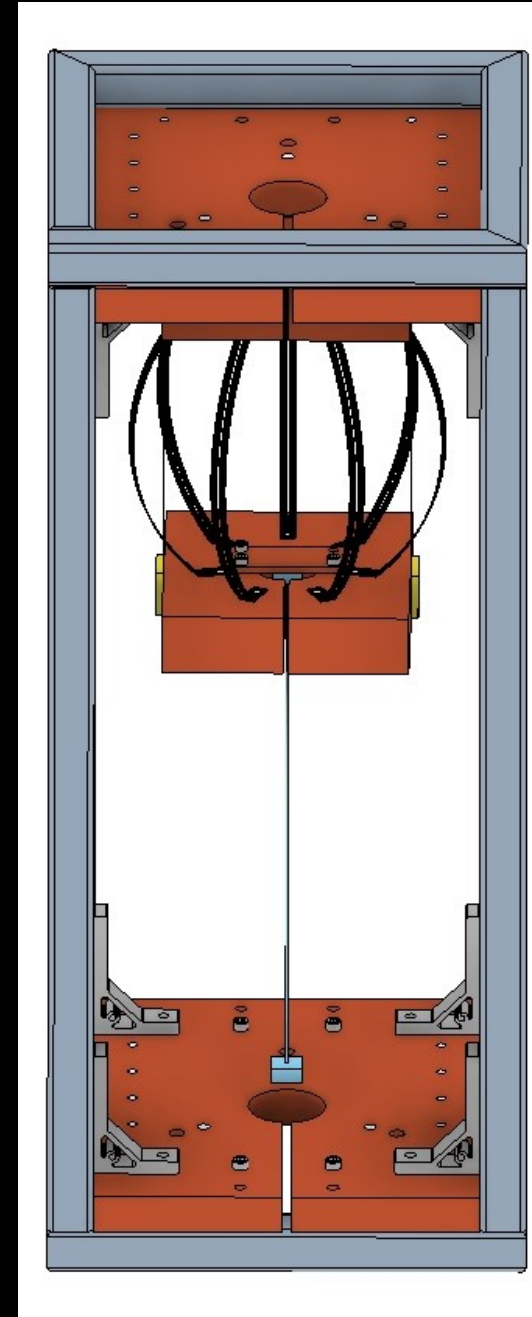
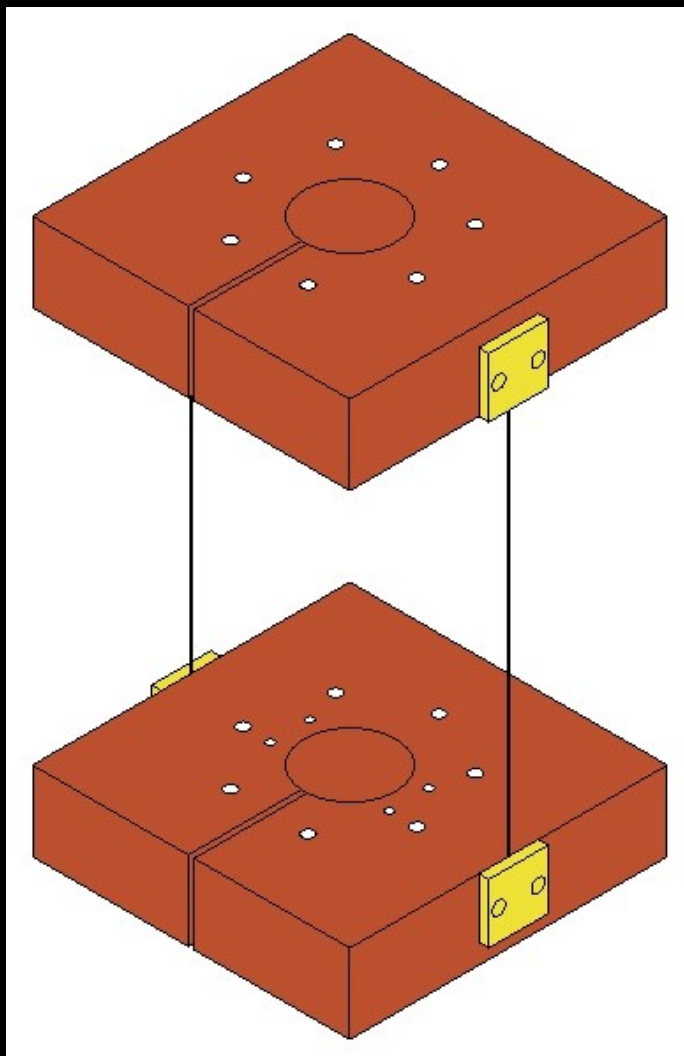
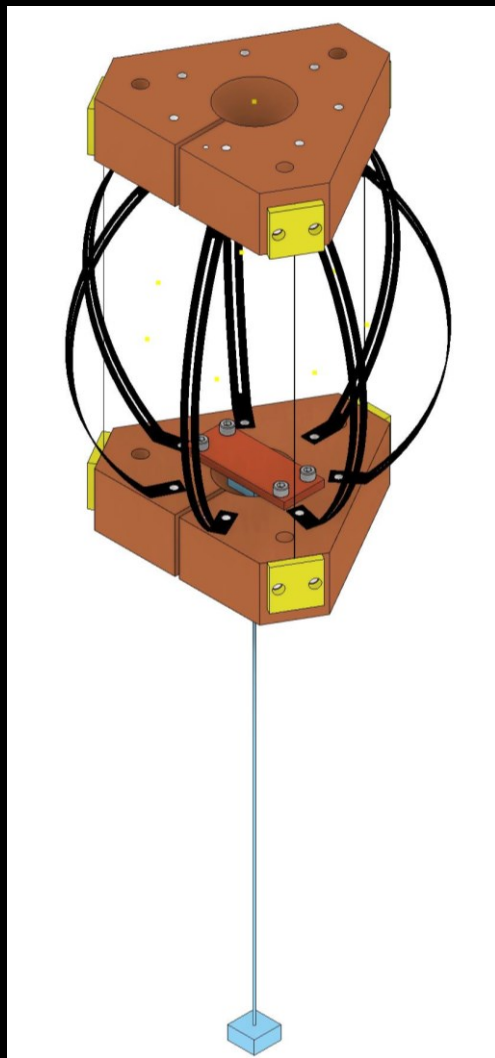


Questions

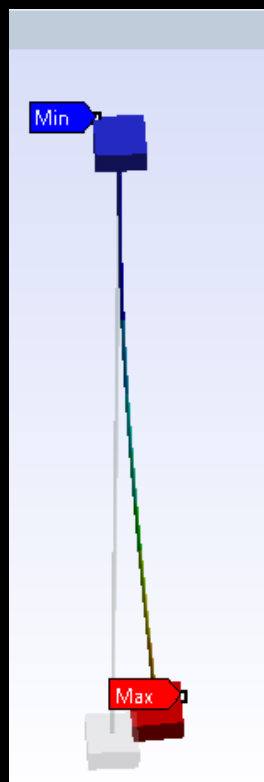
- Cone or Ring?
- ▲ or ■?



Suspension- ▲ or ■ ??

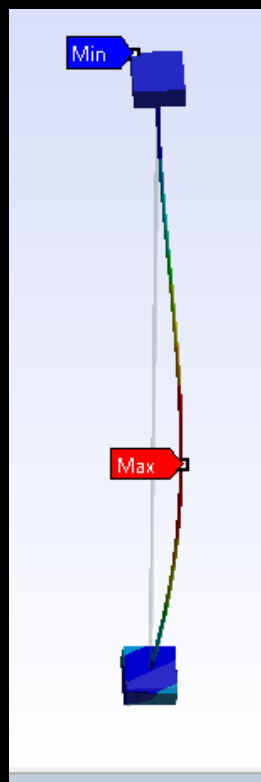


KAGRA Size Fiber



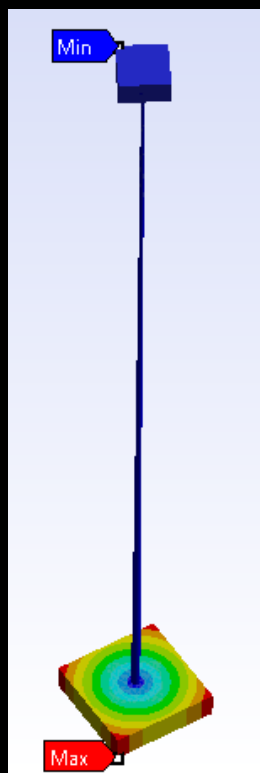
3.93 Hz

P

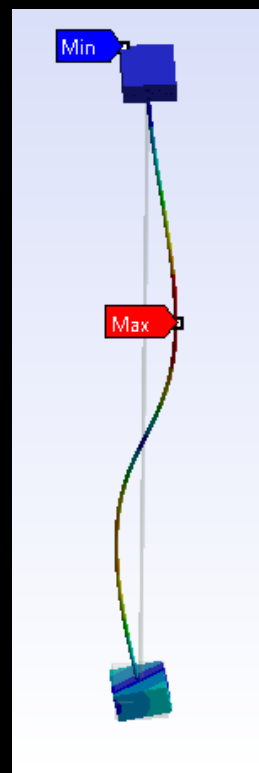


82.69 Hz

V-1



89.67 Hz



247.8 Hz

V-2

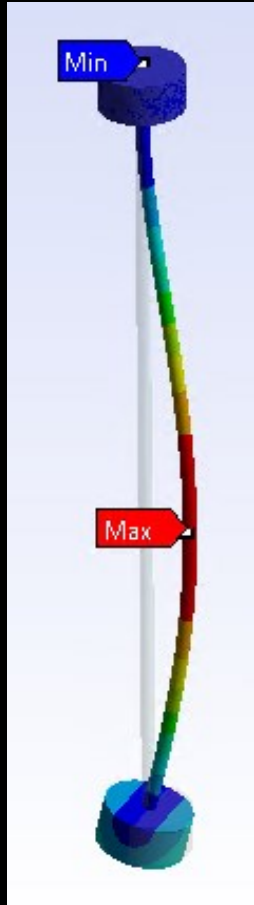
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2	2.	3.932032303
3	3.	82.69990211
4	4.	82.70051656
5	5.	89.67785775
6	6.	247.8195871

Small Fiber



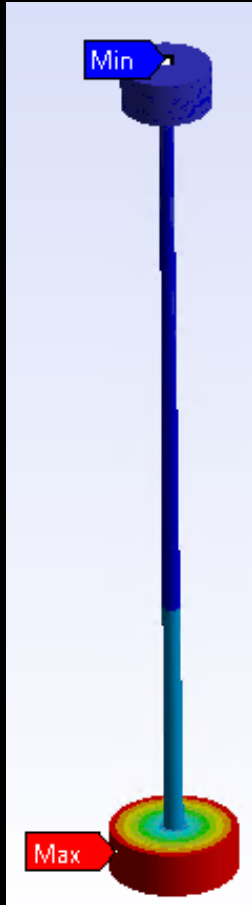
91.34 Hz

P



1225.1 Hz

V-1



1299.1 Hz

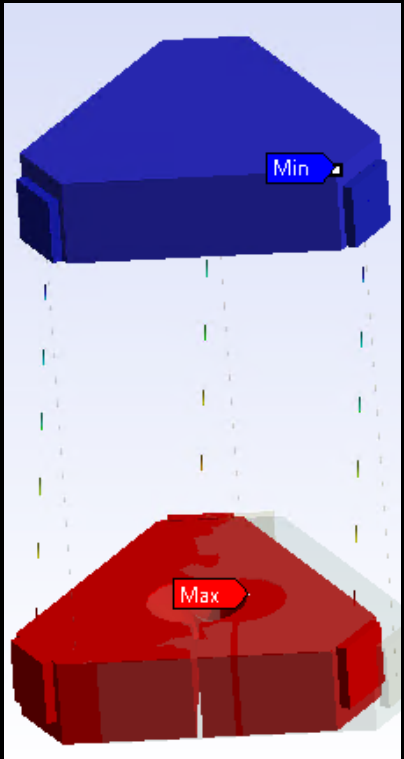


3616.2 Hz

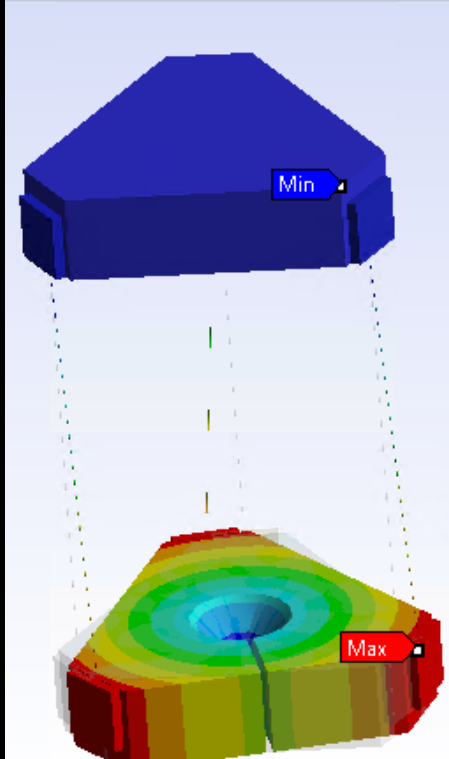
V-2

Tabular Data

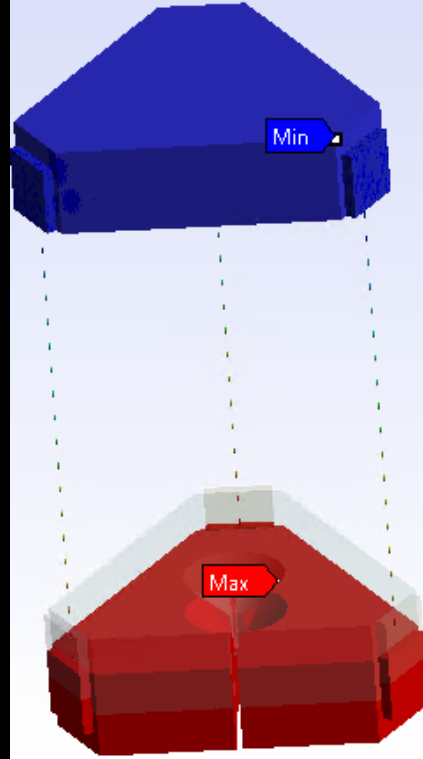
	Mode	<input checked="" type="checkbox"/> Frequency [Hz]
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2	2.	91.35243089
3	3.	1225.09446
4	4.	1225.287864
5	5.	1299.100955
6	6.	3616.252758



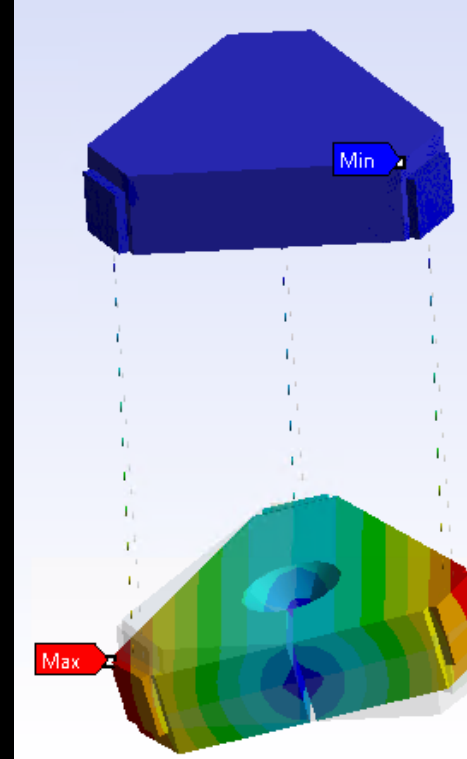
1.12 Hz



20.1 Hz

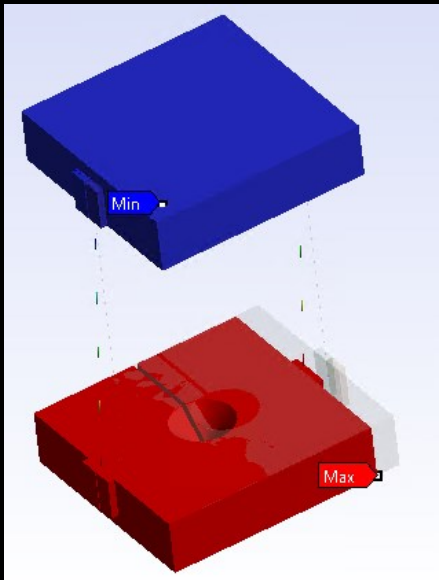


30.84 Hz

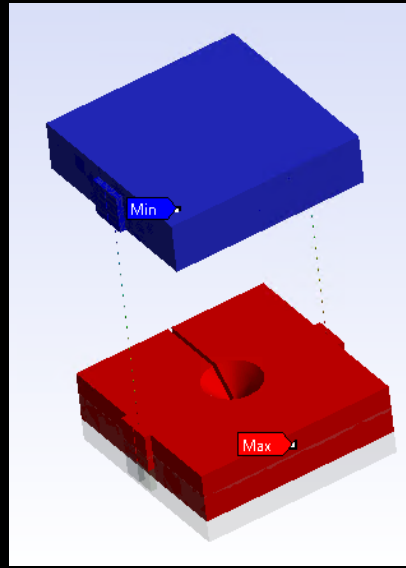


48.7 Hz

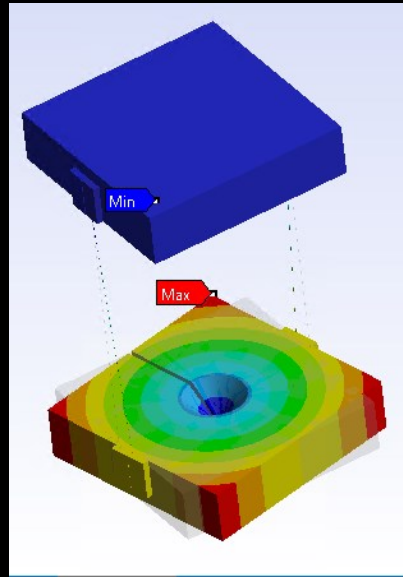
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2	2.	1.121544068
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4	4.	30.84776205
5	5.	48.74136462
6	6.	49.03977678



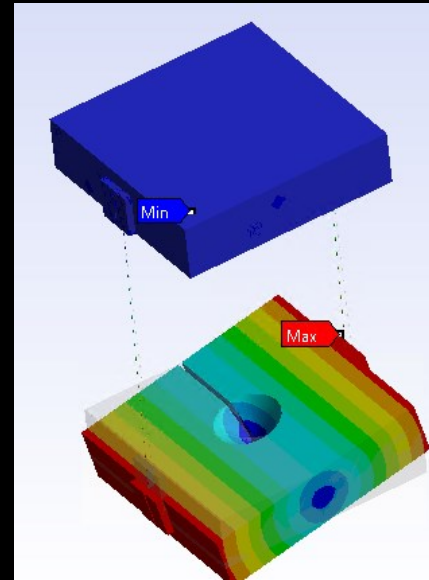
1.12 Hz



24.4 Hz



38.7 Hz



42.5 Hz

Tabular Data		
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2	2.	1.120160745
3	3.	24.45835415
4	4.	38.75974916
5	5.	42.57358426
6	6.	51.48252479