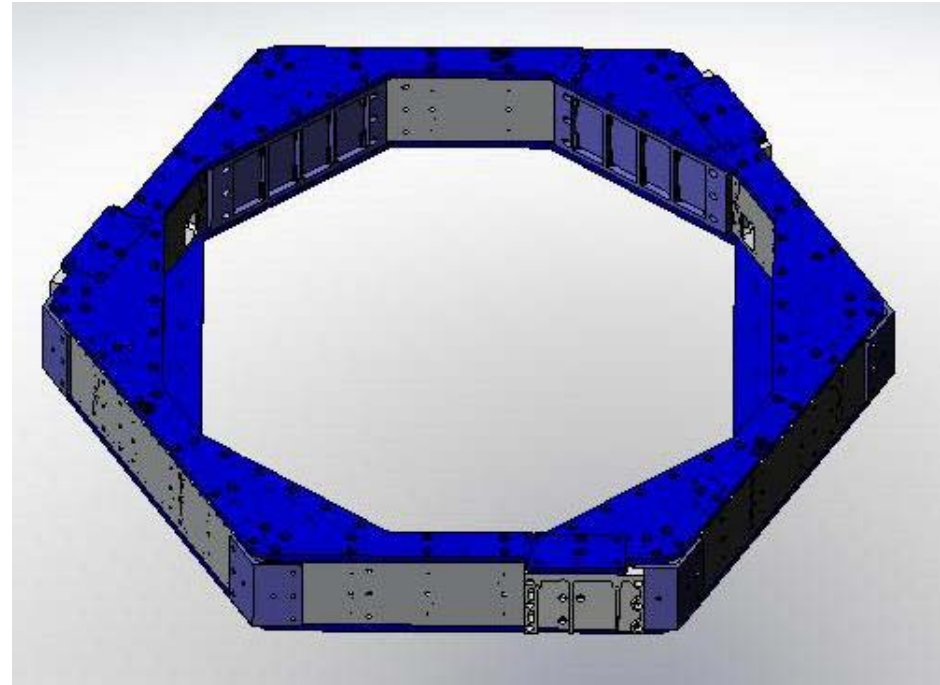
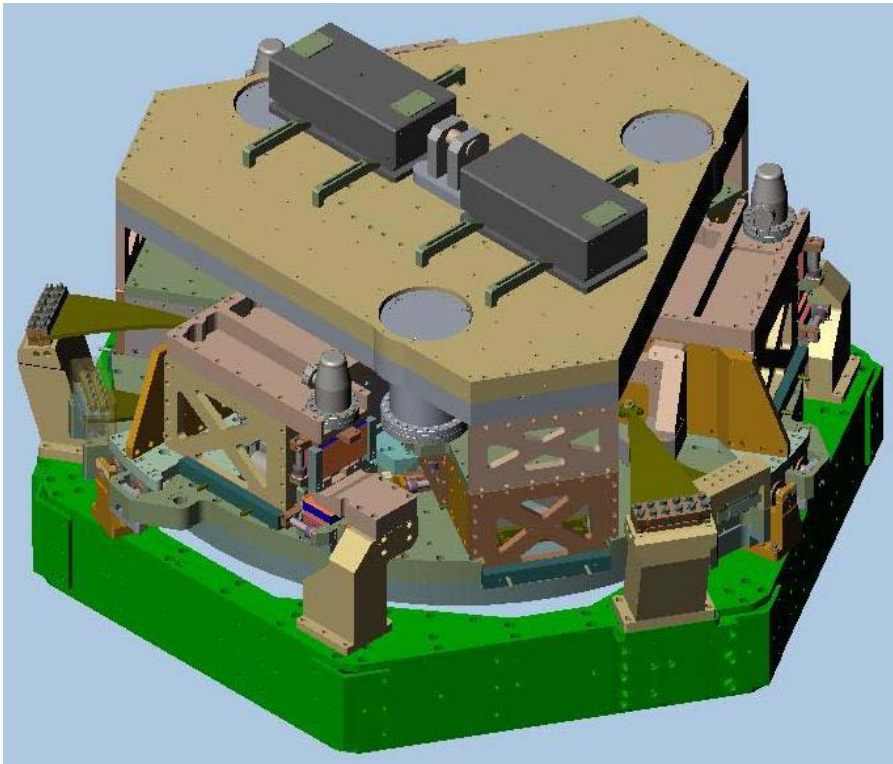


Stage 0, BSC-ISI

Kick-Off Meeting

Celine Ramet
April, 10th 2009

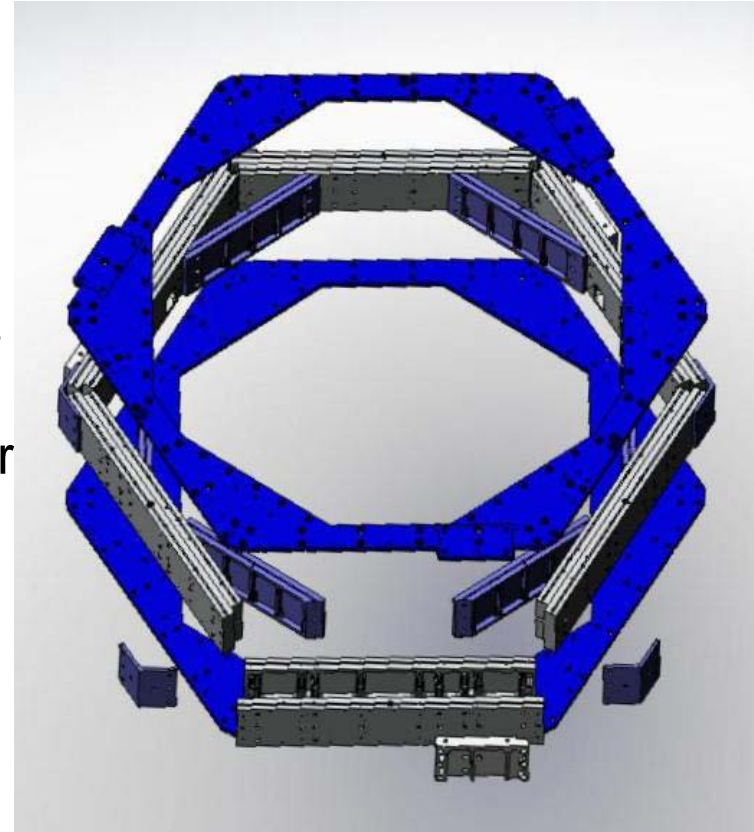
LASTI Prototype BSC-Stage 0



Goals

DECREASING IMPORTANCE

- Address known problems
 - Wrong materials, etc...
- Simplify assembly
 - Reduce parts number
 - Reduce parts with small differences
 - Simplify alignment
 - Reduce tolerances on cutouts/suppr
- Increase stiffness
- Simplify design
 - Eliminate details in cutouts

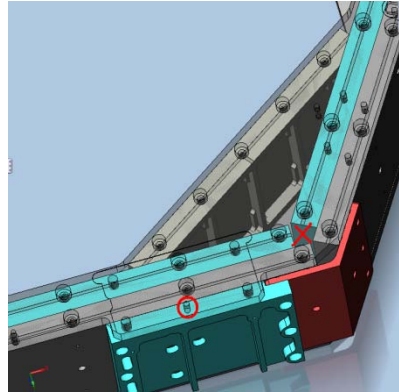


Constraints

- Mass
 - Not exceed mass on LASTI prototype
- Balance, symmetry
- Reference for entire BSC assembly
- Schedule:
 - Preliminary Design Review: June 30th
- No more prototype

Known problems

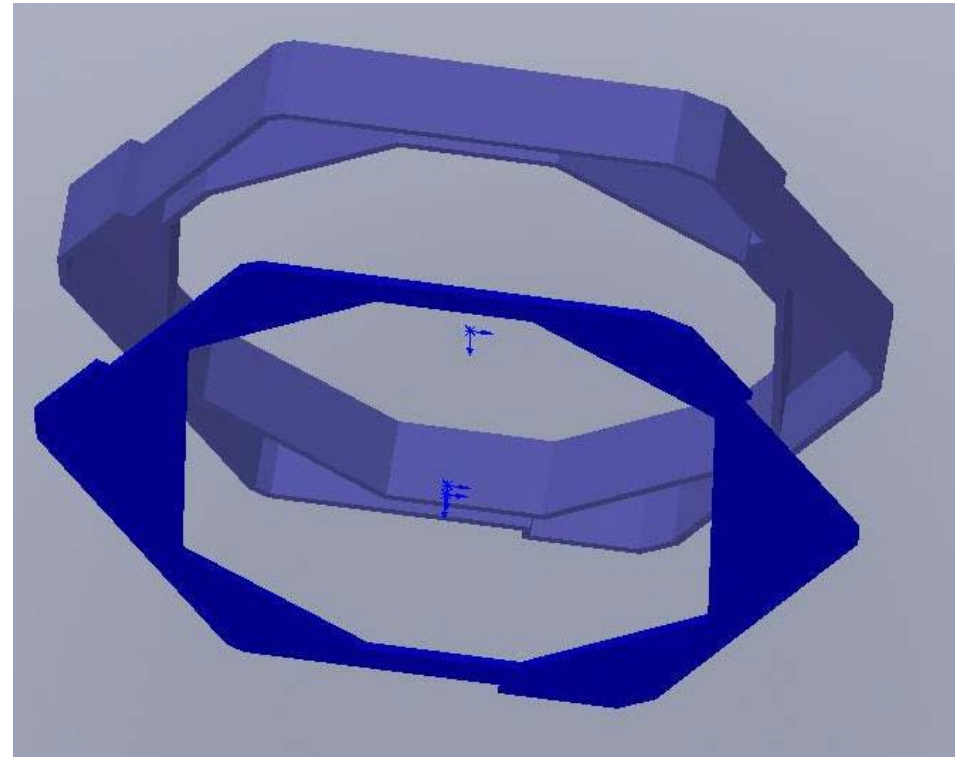
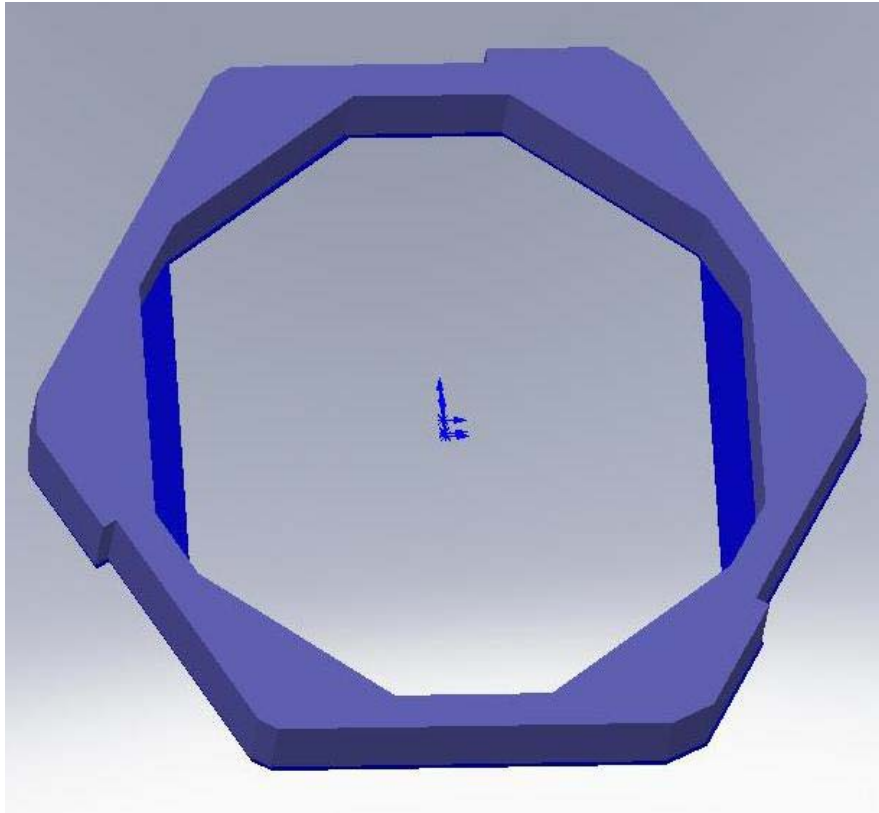
- Lifting top plate
 - Hook holes?
 - Manual?



- Tapped holes for breadboards
 - Top plate or side?
- AL 7075 to AL 6061 (or AL 2024?)
 - $\rho_{AL6061}=0.0975 \text{ lb/in}^3 < \rho_{AL7075}=0.1015 \text{ lb/in}^3$
- Bolts to helocoidals?
- **Others ??**

Simplify Assembly Monolithic?

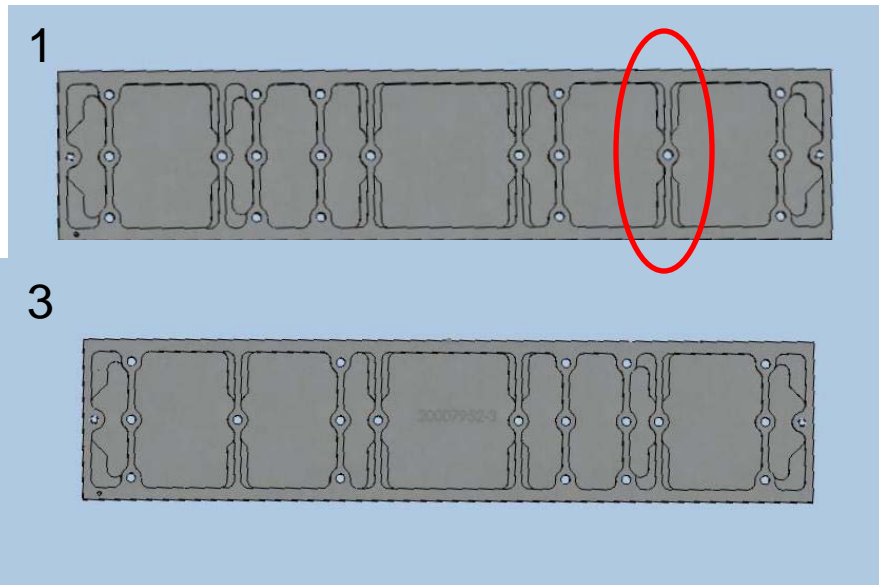
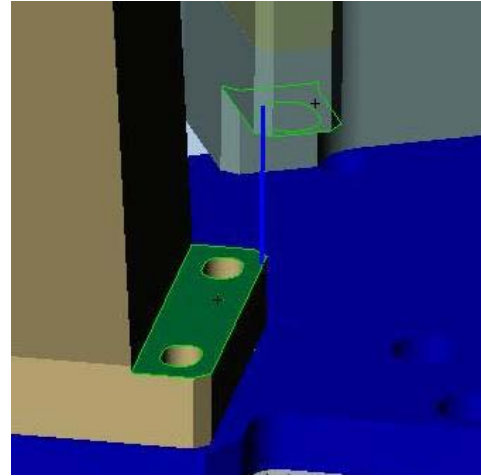
- Same or similar shape



- Different shape?

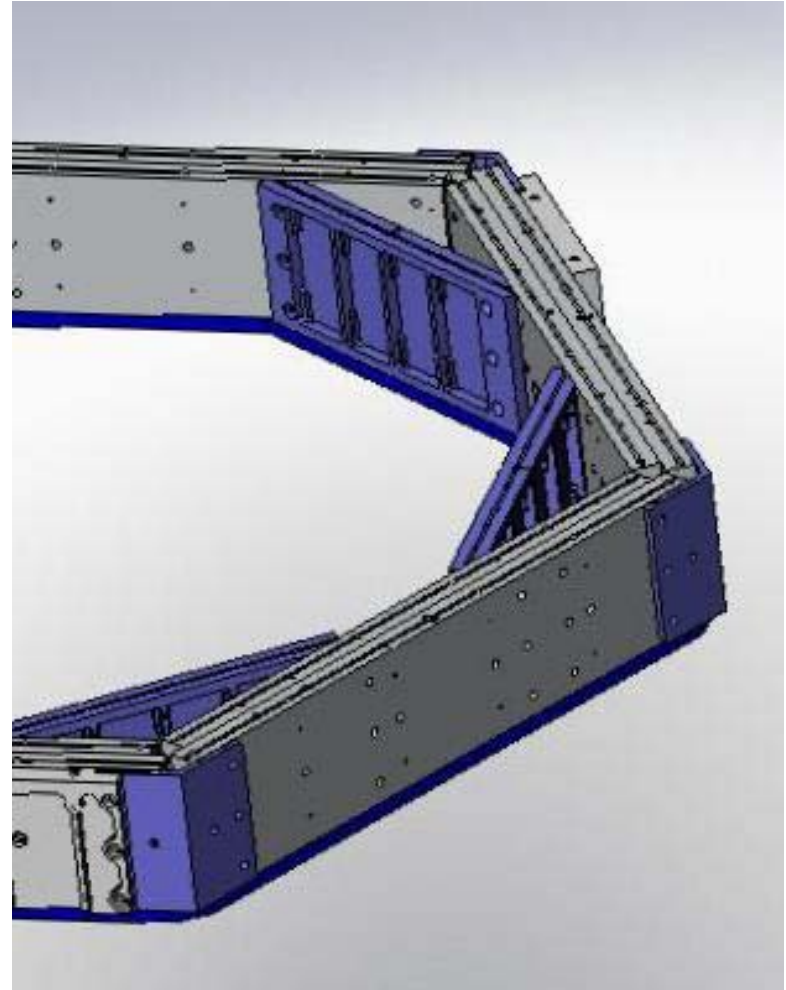
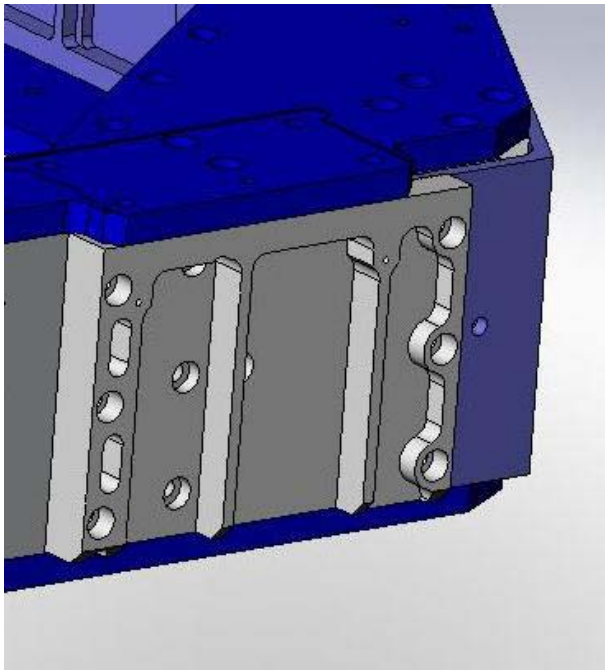
Simplify Assembly

- Inaccessible bolts
 - Ex: Spring post (Stage 0-1)
- Close parts
 - Ex: outer hex wall (4 versions repeated 2x)



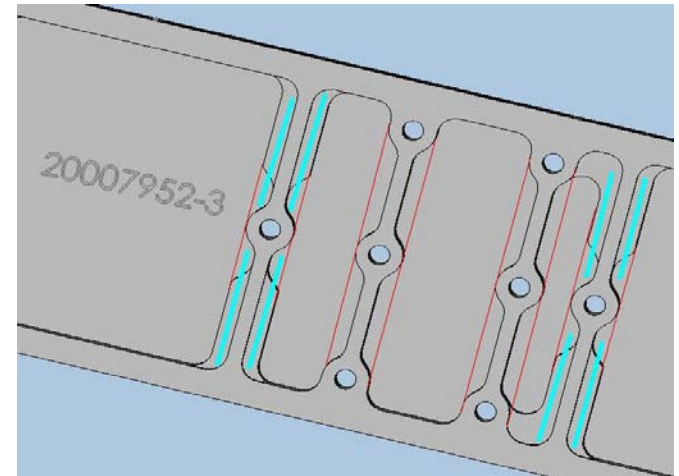
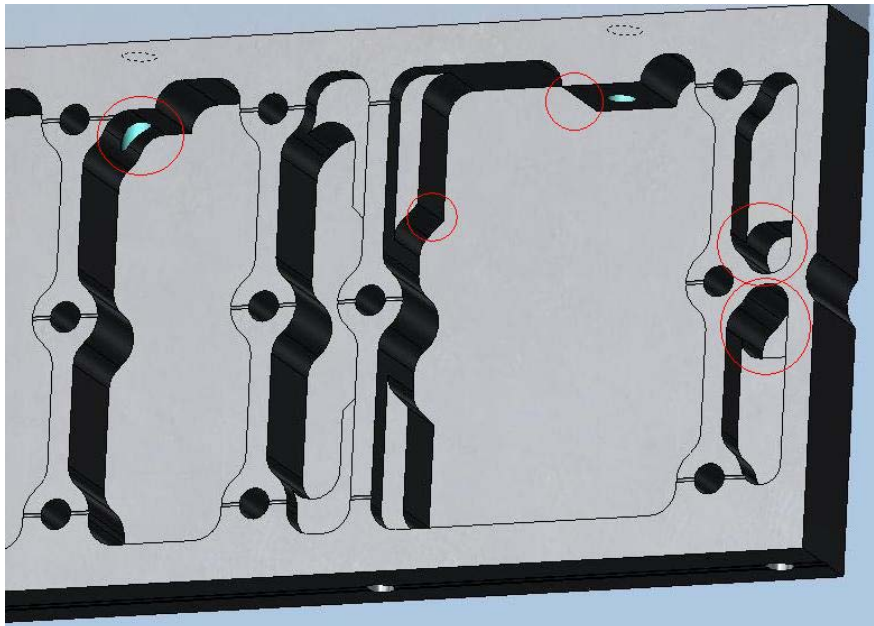
Simplify Assembly Alignment

- Top plate
 - Side plates
 - Blades gussets



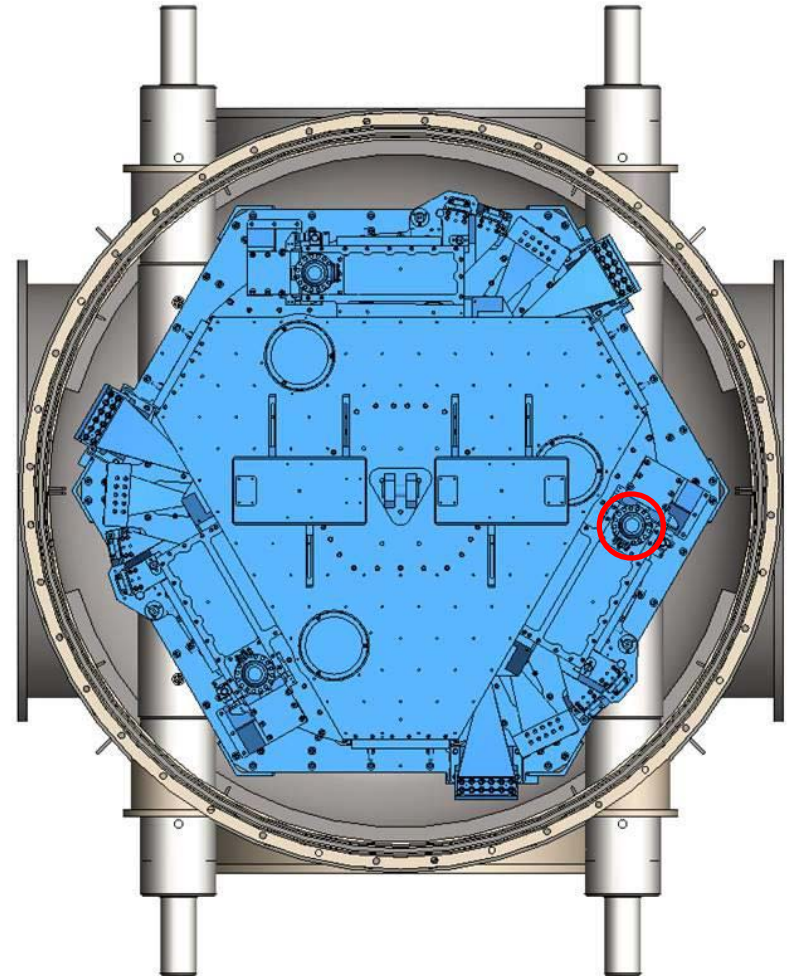
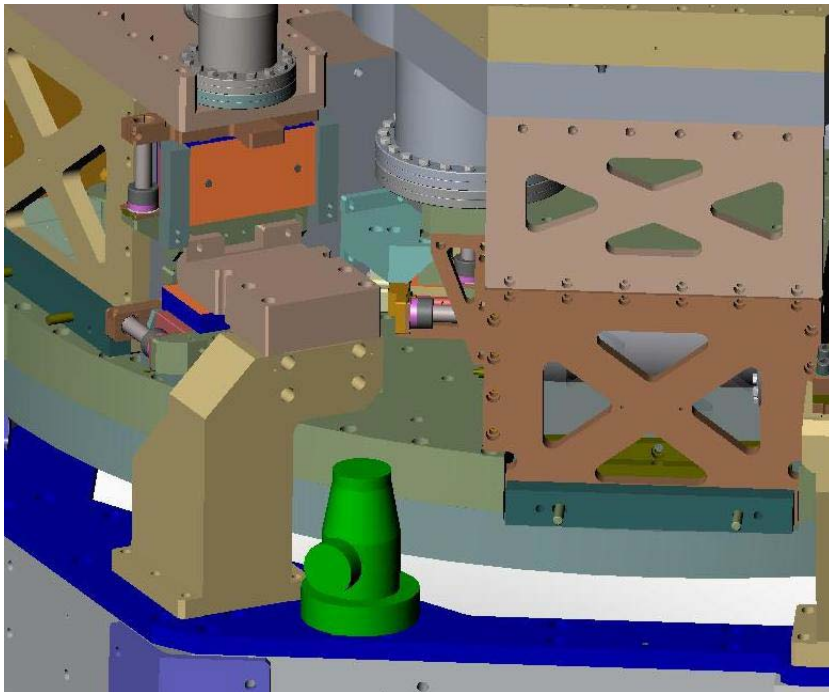
Increase stiffness/Simplify design

- Increase “webbing thickness”
 - Evaluate weight gain
- Reduce details



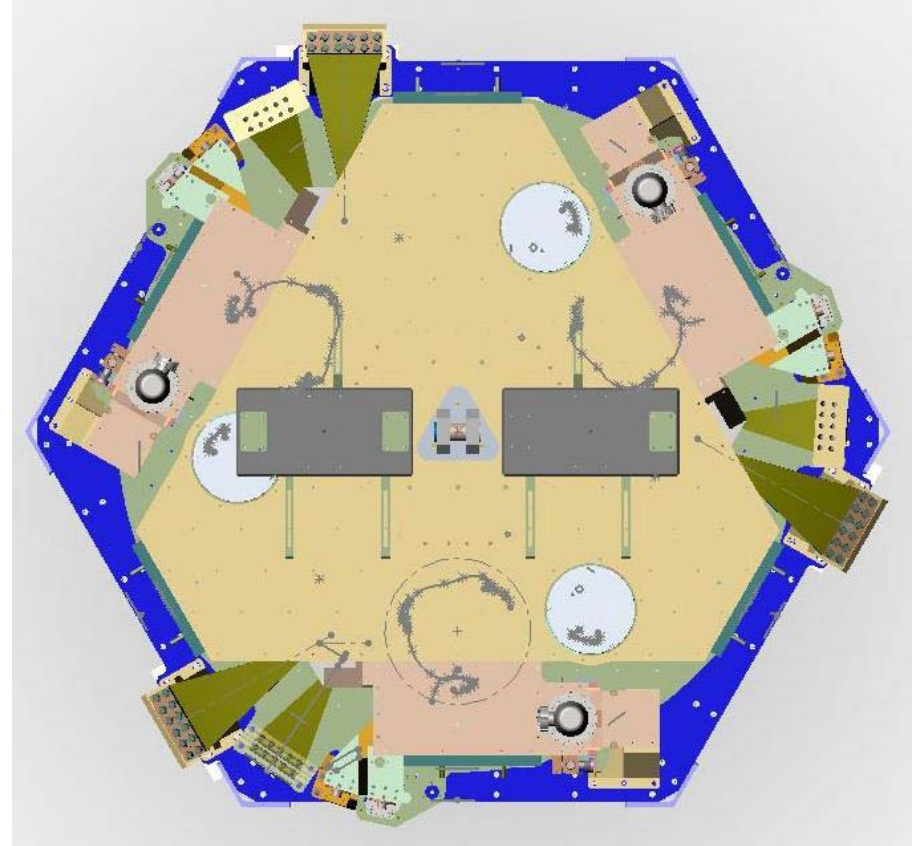
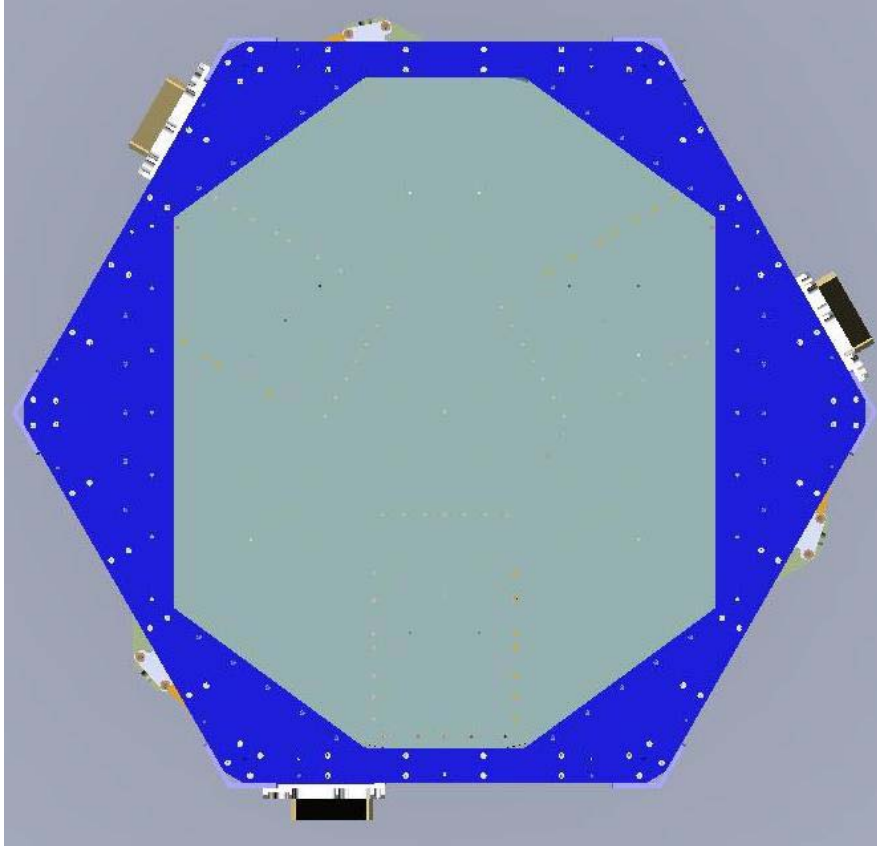
Other

- Possible L4Cs
 - Top plate or side?



Other suggestions?

Bottom/Top views



AL alloys properties

AL	Density (lb/in ³)	Tensile Strength (ksi)	Young Modulus (ksi)
6061-T6	0.0975	45	10.0e3
7075-T6	0.1015	83	10.4e3
2024-T4	0.1012	68	10.6e3

Source: Mechanical Engineer's Handbook-Materials and Mechanical Design (3rd Ed.), Myer Kutz, Ed John Wiley & Sons

Vacuum capable

LIGO

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