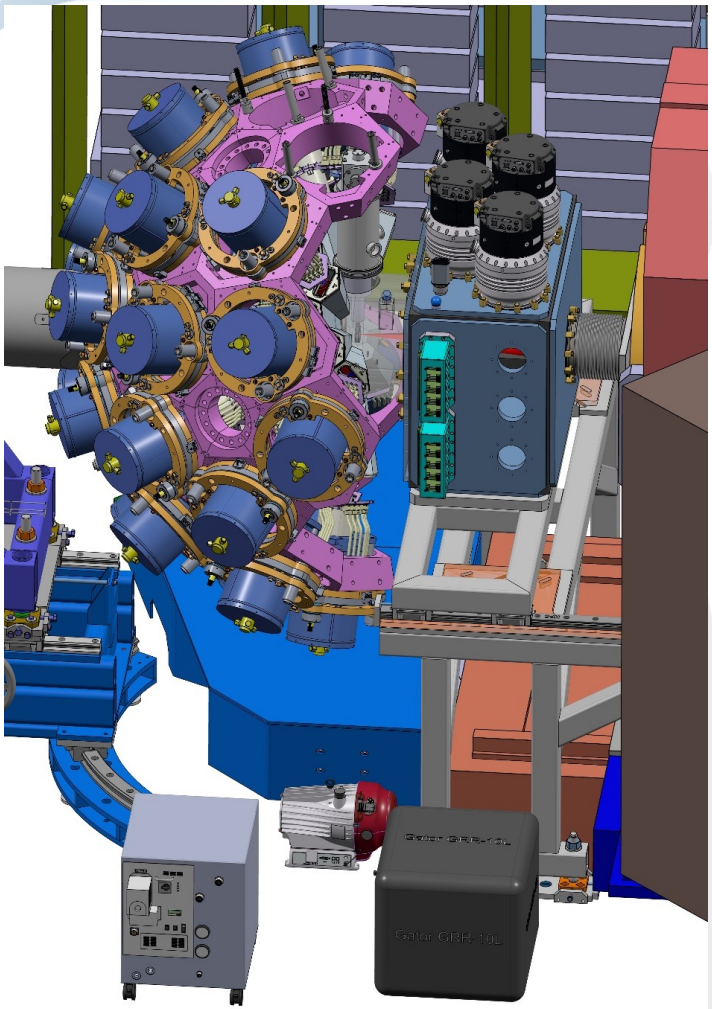
Mechanical integration of GRIT into AGATA-VAMOS



Yann Peinaud, IJCLab
Marlène Assié, IJCLab

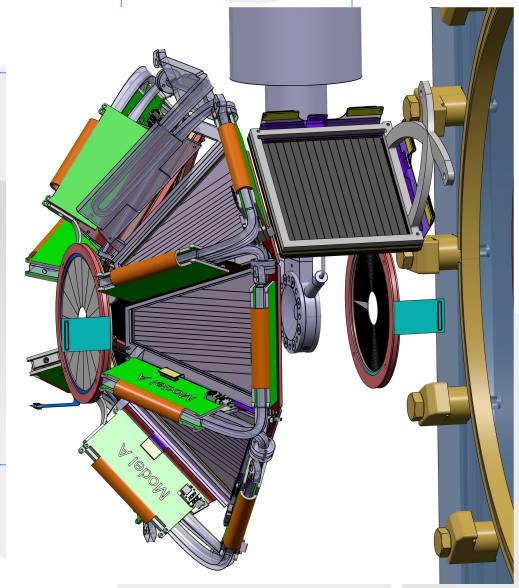
GRIT Phase 0 configuration (final)

UPSTREAM (AGATA side)	90 degrees	DOWNSTREAM (VAMOS side)

1 square detector (2 stages)
read by Mesytec

6 trapezoidal detectors (2 stages)
read by GRIT electronics (PLAS)

+ 1 annular detector (1stage)
read by Mesytec



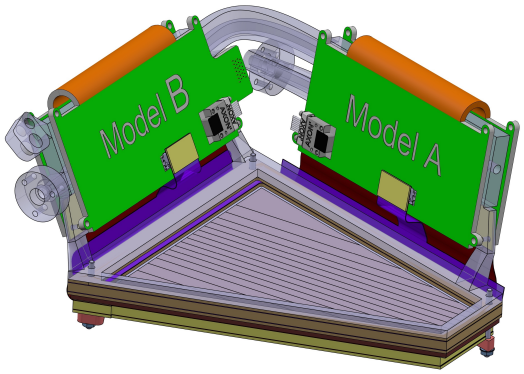
1 annular detector (1 or 2 stages)
read by Mesytec

Total : ~ 2200 strips to be read

Mechanics inside the reaction chamber

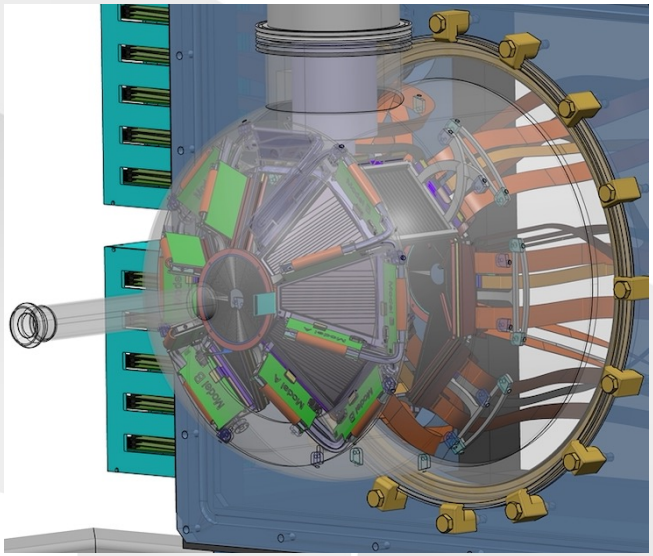
UPSTREAM (AGATA side)

Trapezoidal + annular detectors **hold by GRIT cooling blocks** attached to the reaction chamber



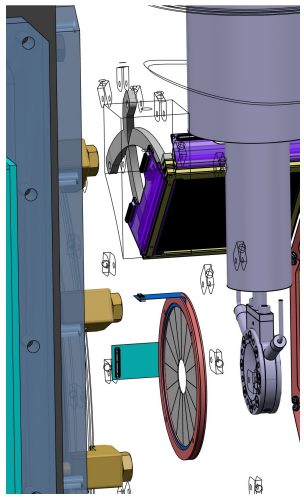
90 degrees

New support designed

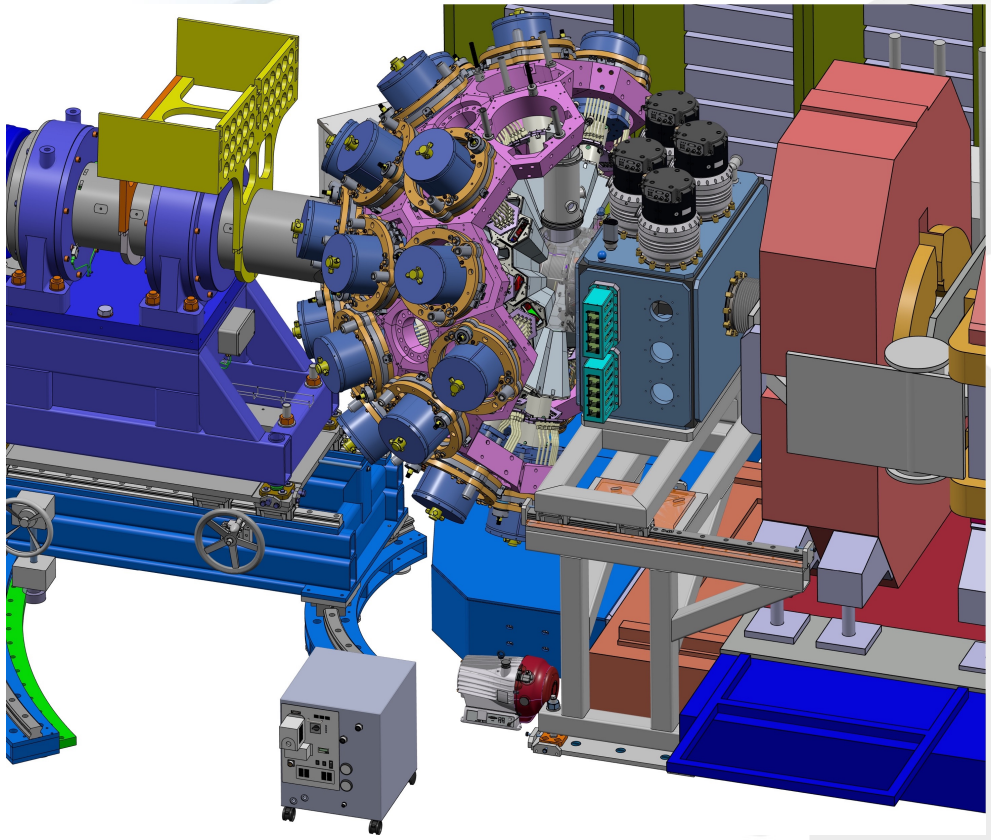


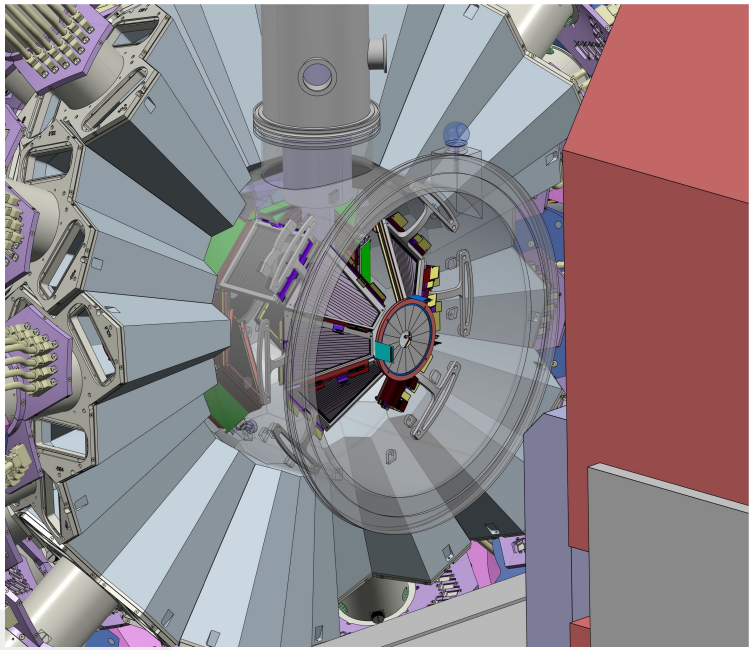
DOWNSTREAM (VAMOS side)

New support designed



General view

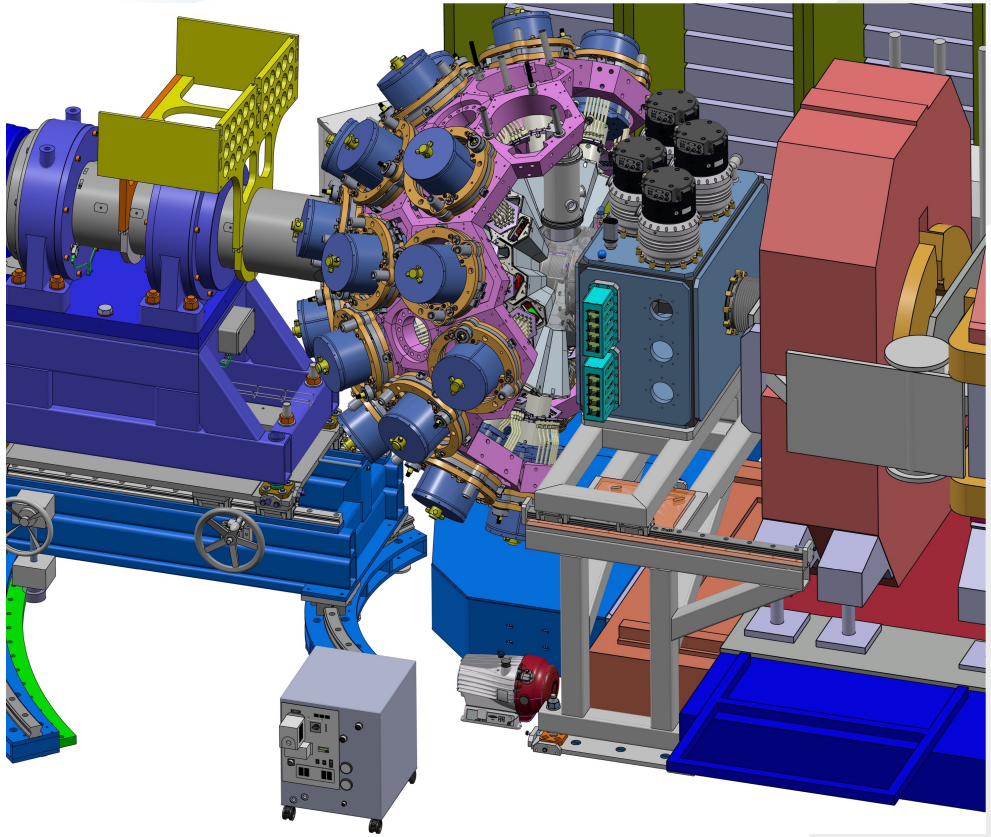




Main constraint =

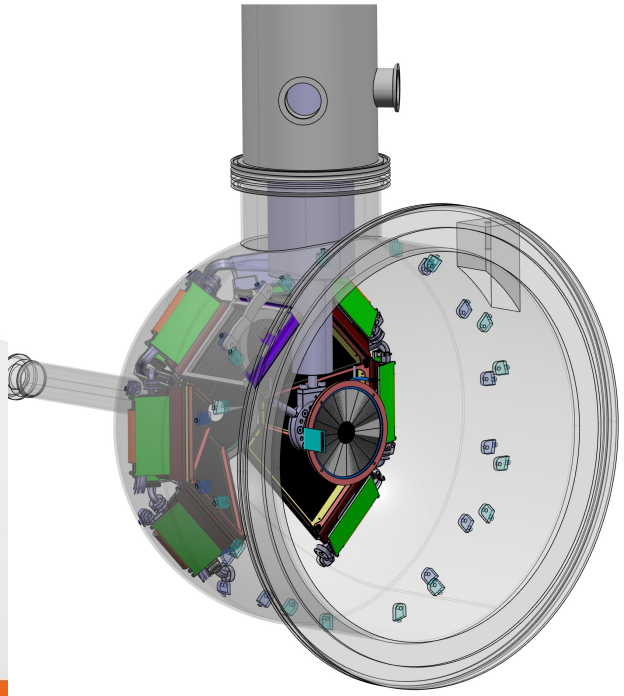
Integration of the **cryogenic ^{3}He target** (CTADIR and ATRACT) in DN160

General view - Main reaction chamber



Main reaction chamber (3 mm Al)

GRIT detectors will be mounted inside the reaction chamber in the LAB and brought all together in the experimental room.



General view - Chamber with all utilities

Pumping needs :

Vacuum tests were performe for GRIT
Main contributions :

- detectors packaging
- FEB

Need to reach few 10^{-7} mbar for cryogenic target

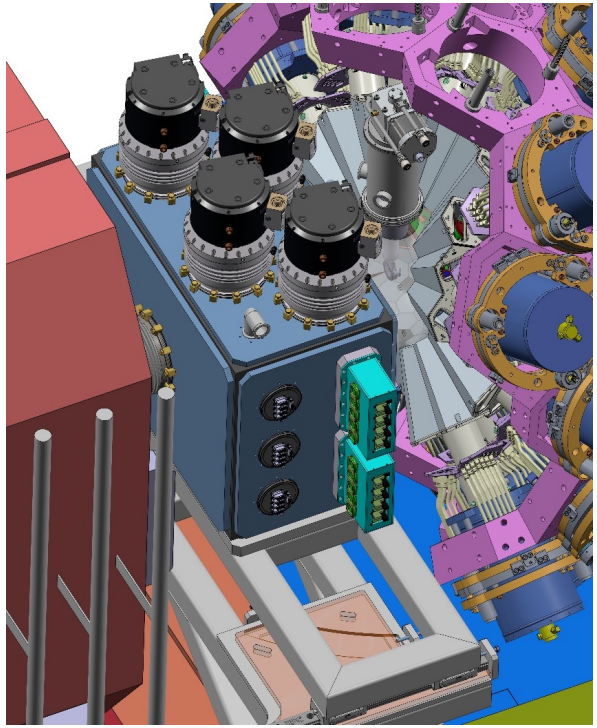
2x DN200 turbo-pumps
1x DN40 gauge

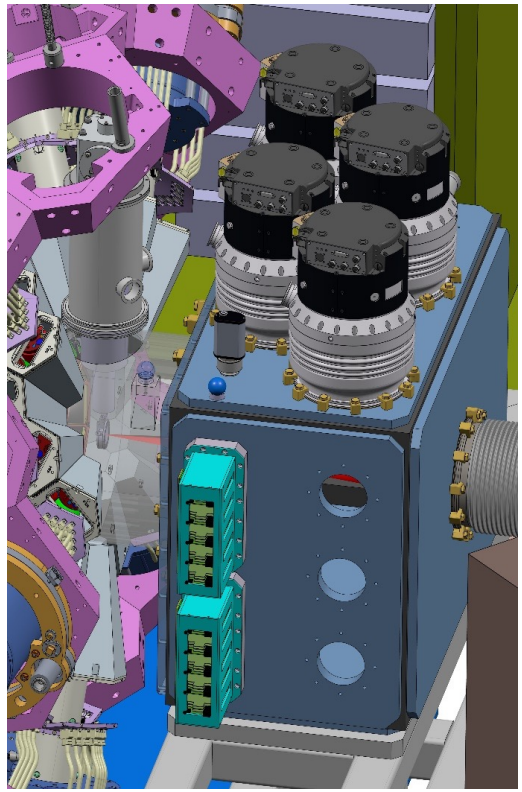
Electronics/ Connectics :

3x brides AXON for GRIT electronics
4x brides PISTA for plan B (Mesytec)

Cooling system (only for GRIT) :

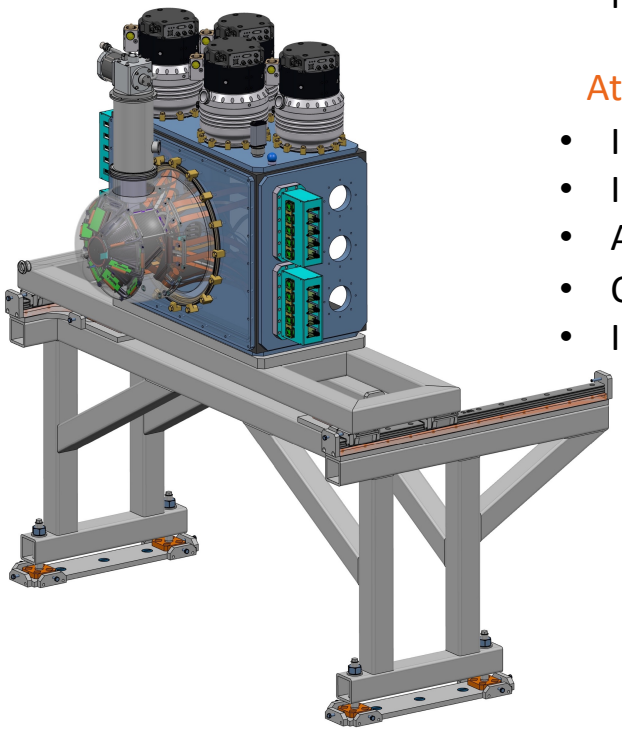
3x flanges for cooling





Frame and adjustement/ surveyor measurement

Welded frame



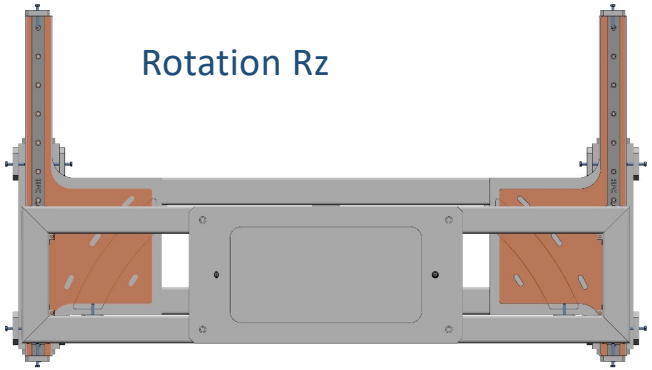
In the LAB :

- Detector mounted and measured
- Reference points will be taken on the chamber and used to adjust the reaction chamber
- Measurement of the shape of the reaction chamber (Al)

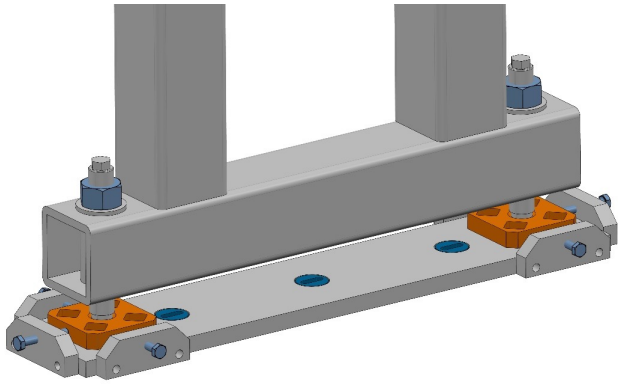
At GANIL :

- Installation of the Al chamber
- Installation of chamber with all utilities
- Adjustement with laser tracker
- Connection between chambers
- Insertion into AGATA

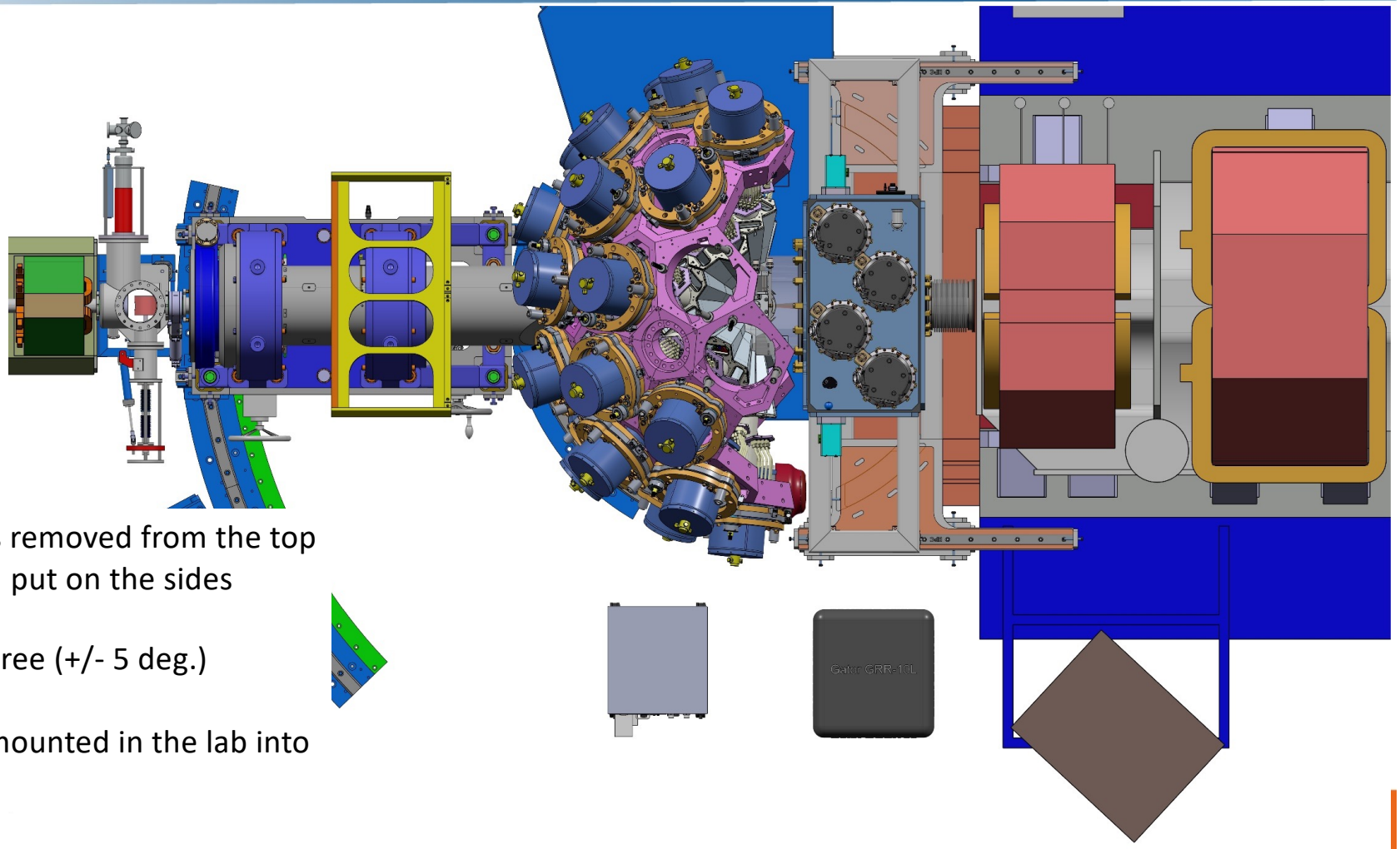
Rotation Rz



X/Y/Z translation
+ Rx/Ry rotation



General design for GRIT integration

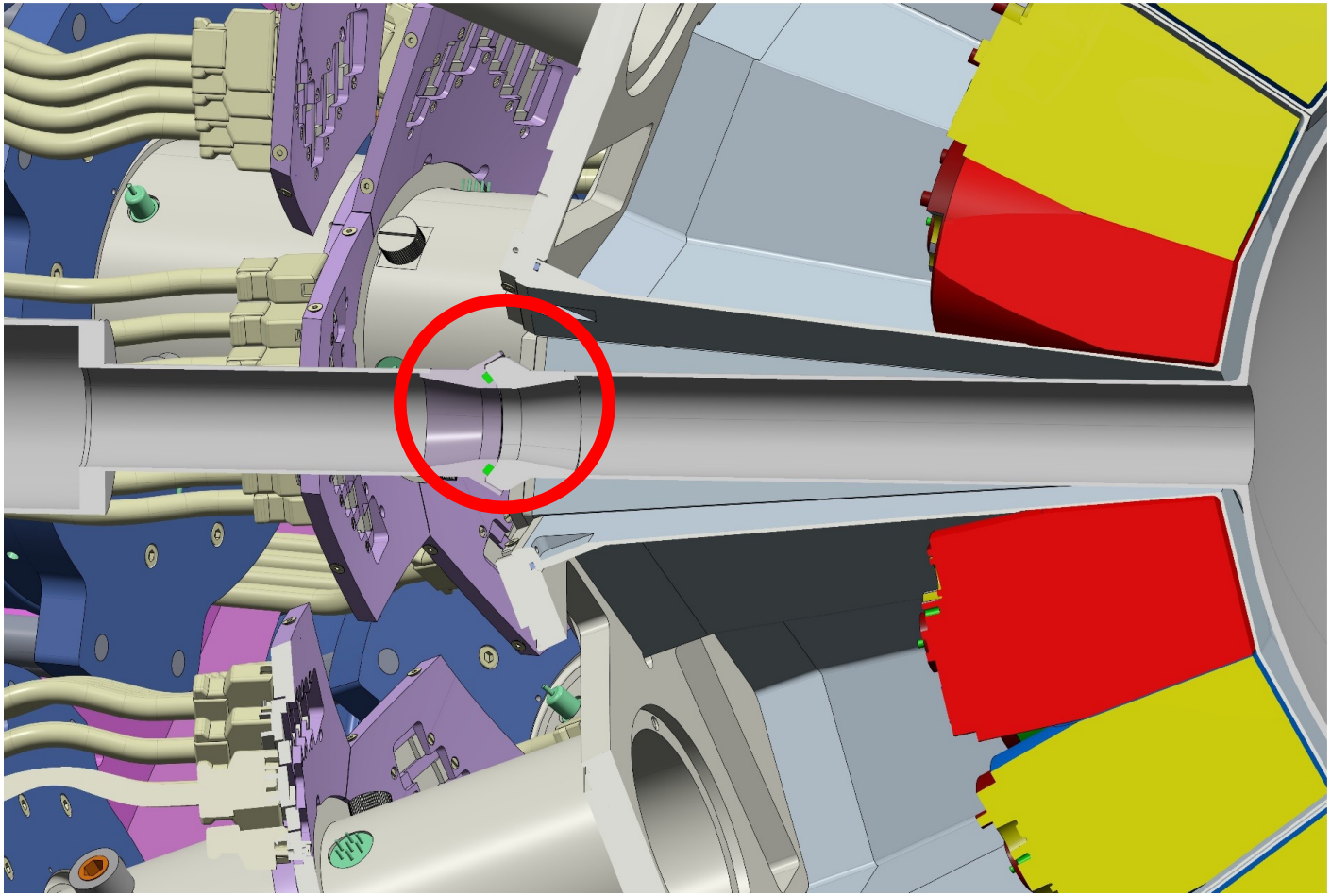


- Agata 2π with 2 modules removed from the top (for target purposes) and put on the sides
- Vamos -650 mm at 0 degree (+/- 5 deg.)
- GRIT Phase 0 is already mounted in the lab into the reaction chamber

Connection of reaction chamber with beam pipe

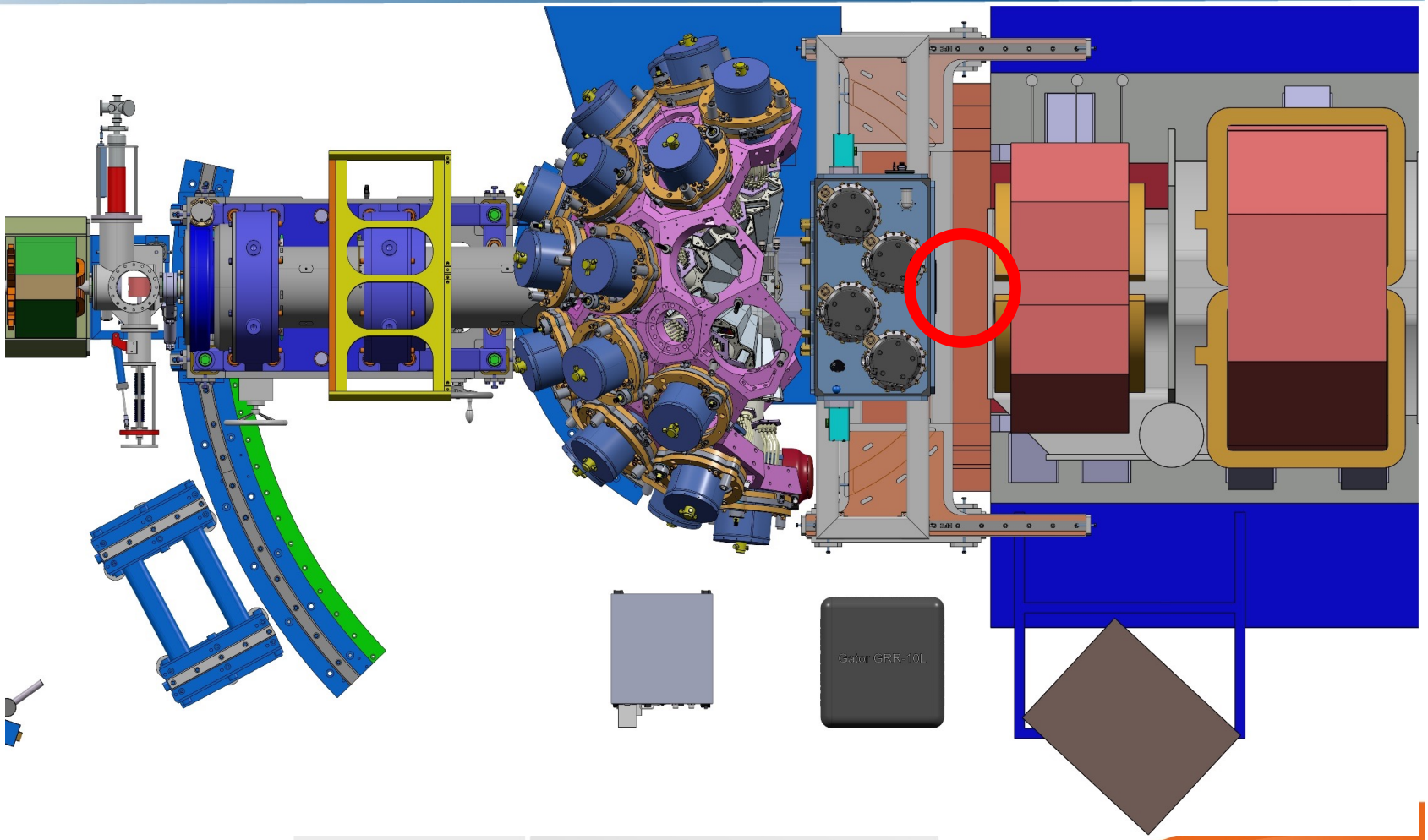
Beam Pipe designed by Patrice Gangnant)

Same design but shorter (-400 mm)



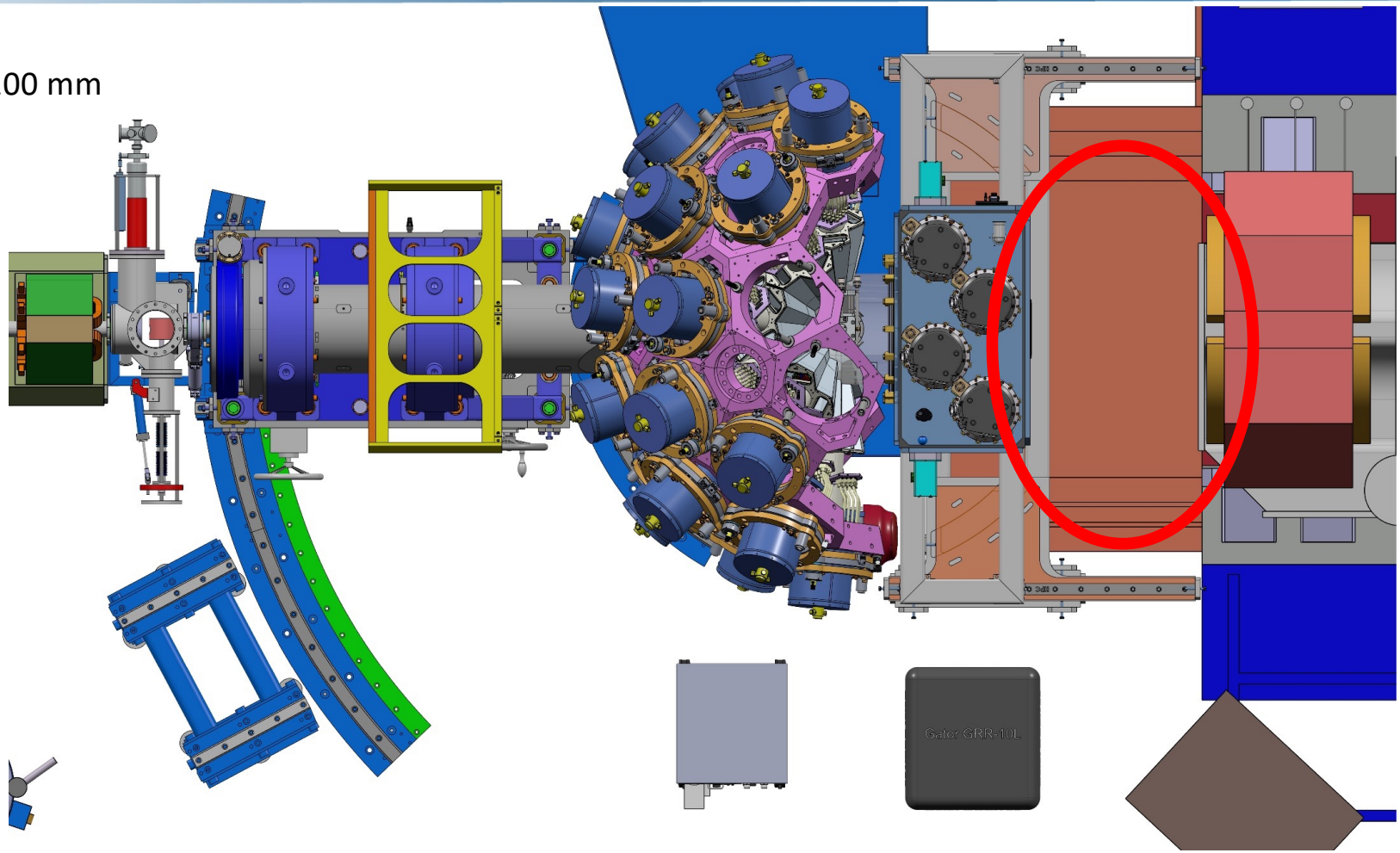
Mechanical mounting of the GRIT chamber

Remove the mechanical bellows (length=200 mm)



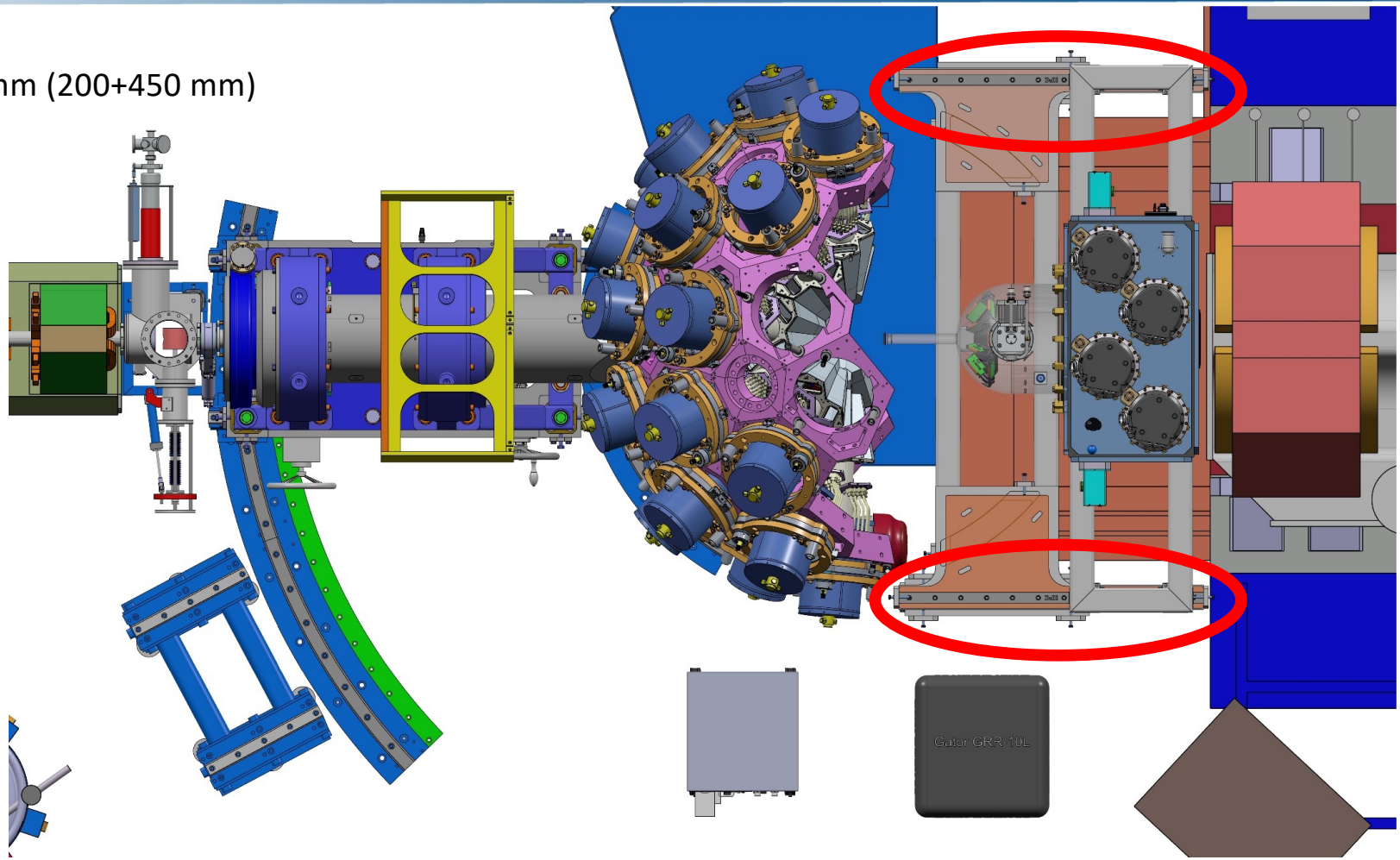
Mechanical mounting of the GRIT chamber

Move Vamos back -1100 mm

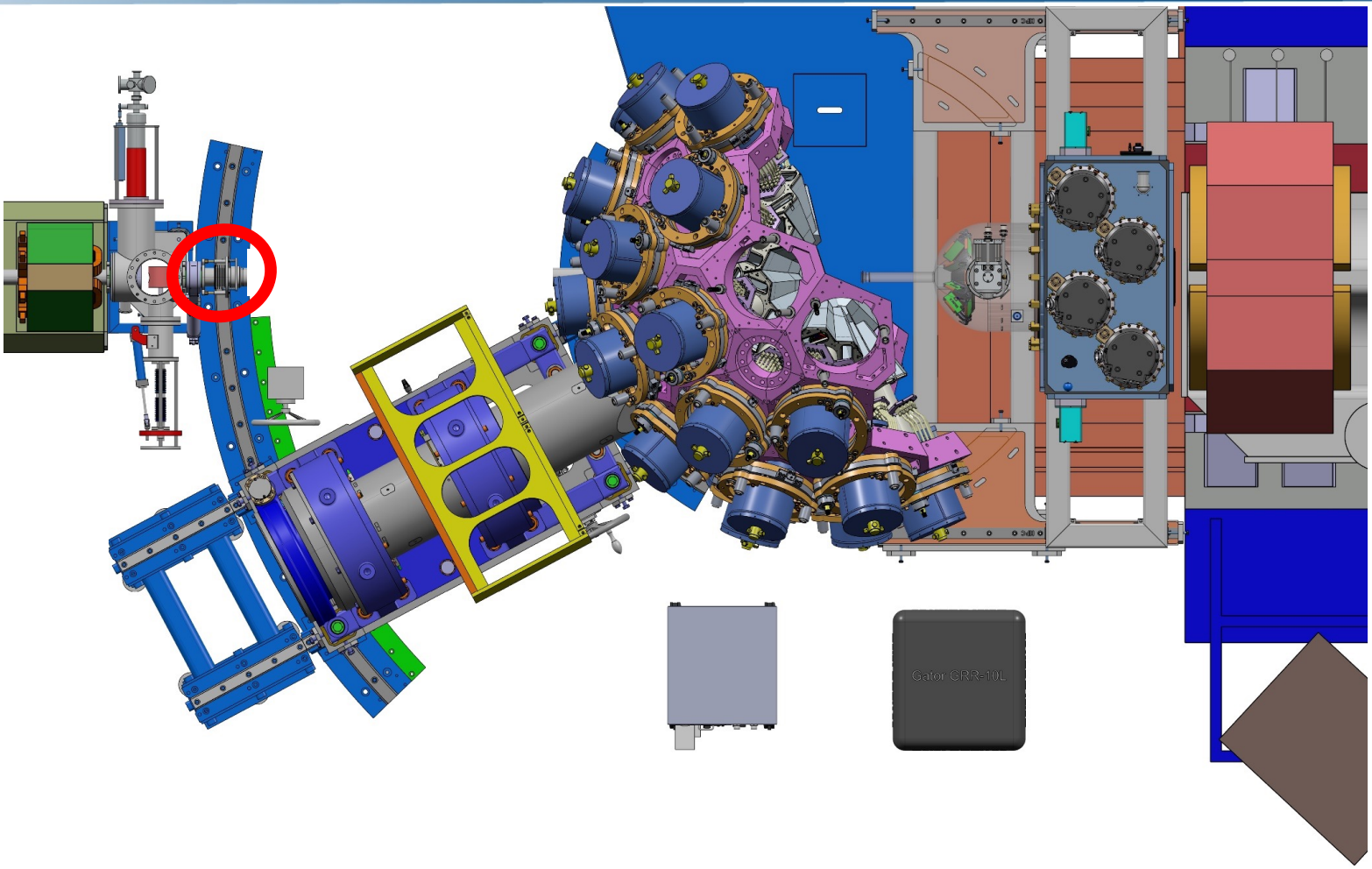


Mechanical mounting of the GRIT chamber

Move GRIT back -650 mm (200+450 mm)



Mechanical mounting of the GRIT chamber



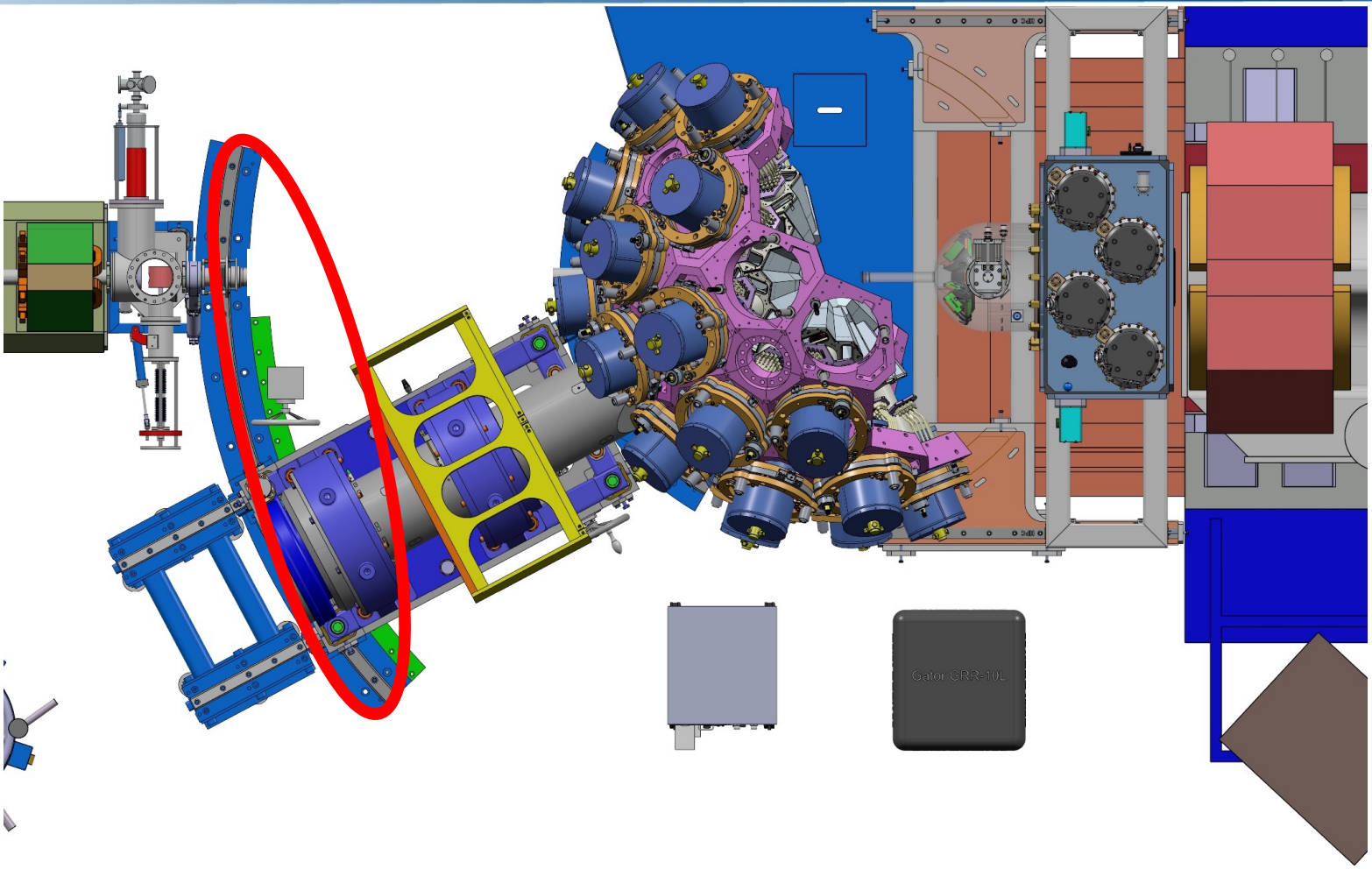
Uncoupling of beam pipe / reaction chamber pipe

+ Rotation

→ The pipe stays into the shaft

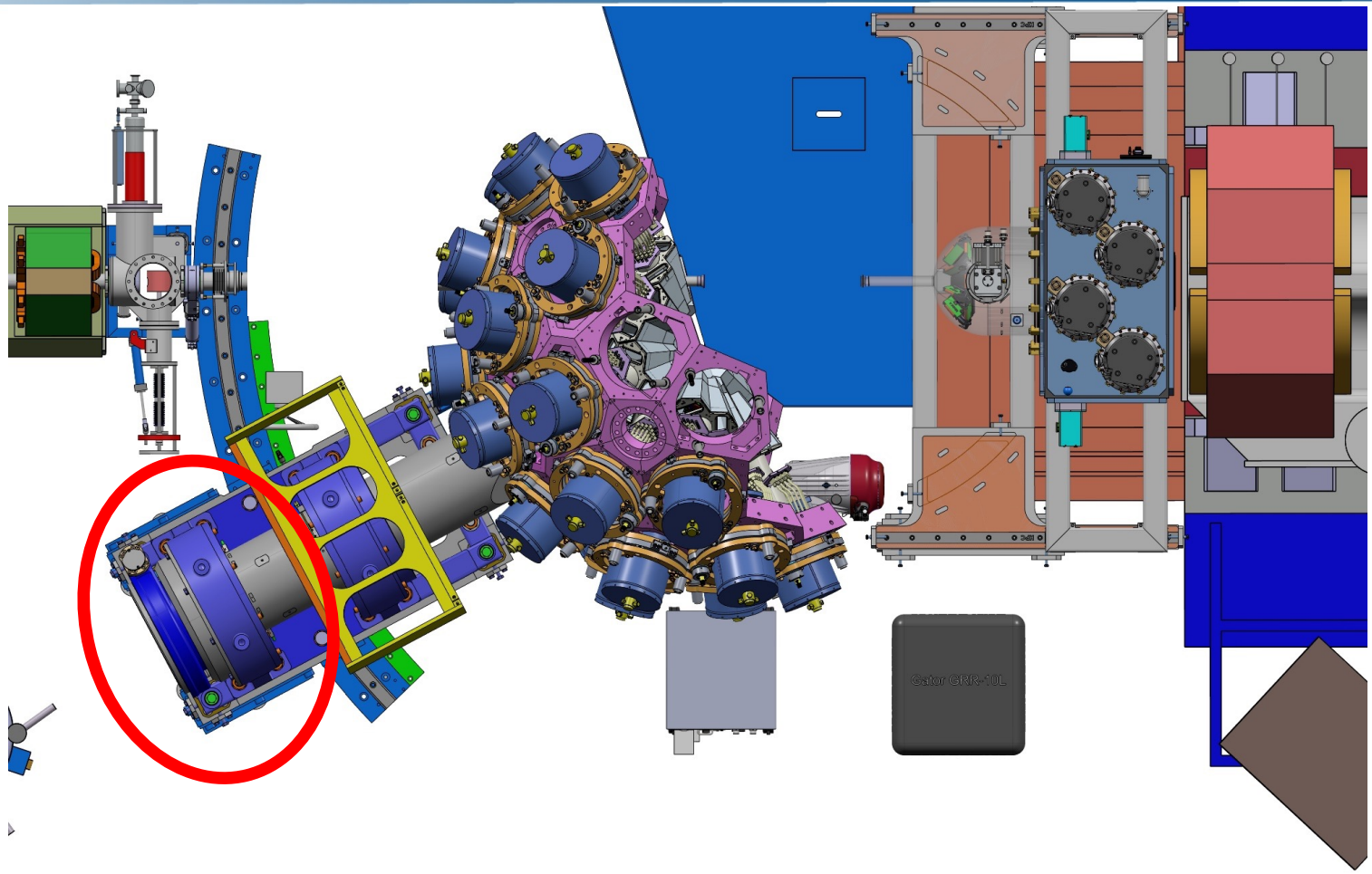
Mechanical mounting of the GRIT chamber

Agata is now rotated at -28 deg.



Mechanical mounting of the GRIT chamber

… AGATA can be moved back to operate it



Conclusion

- Reaction chambers almost finalised : we are currently reducing its size
- Internal design for detectors to be finalised (supports, kaptons…)