QUBIC Mount Structural Design

M. C. Medina on behalf of

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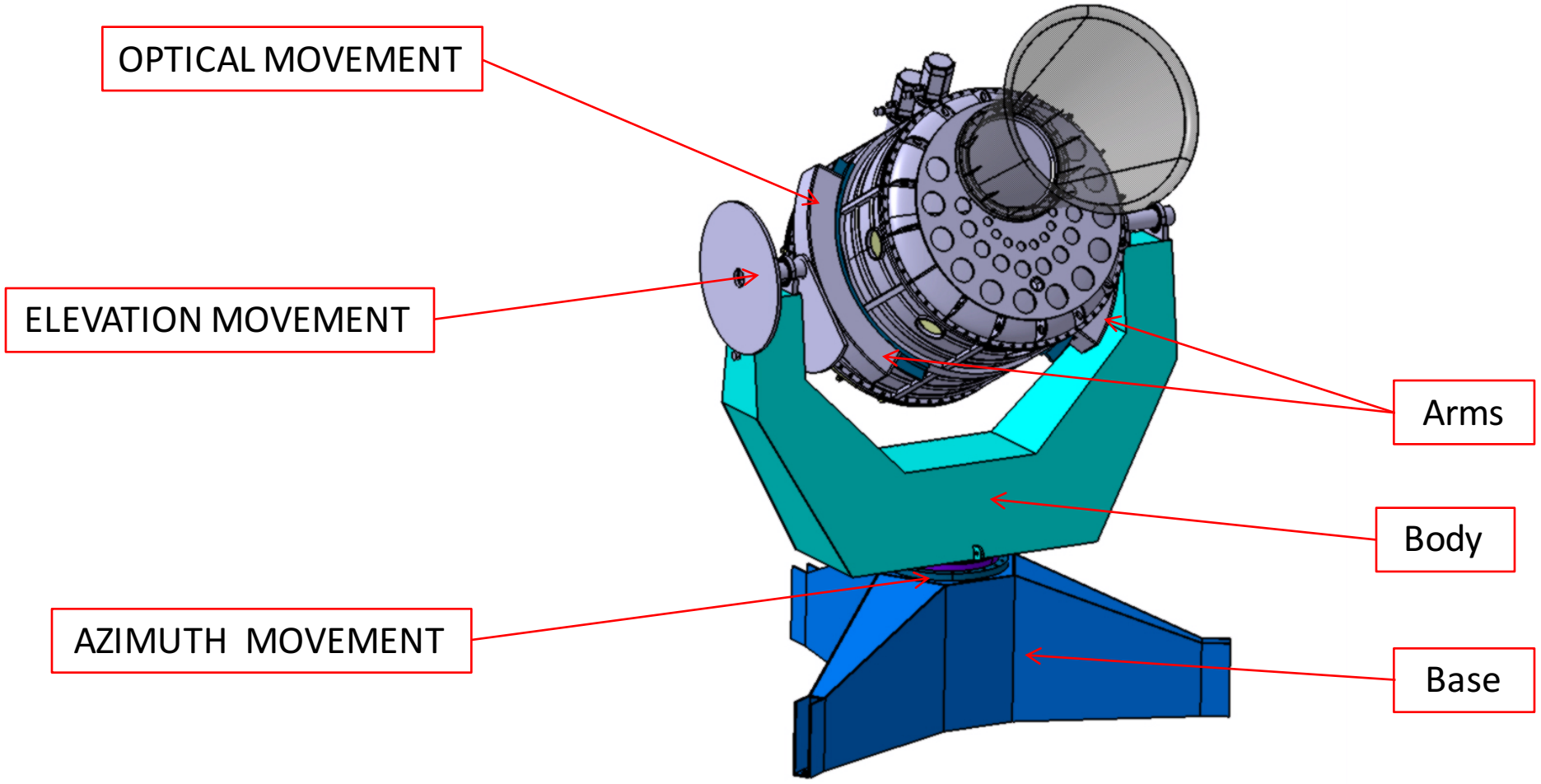
Argentina

Qubic Mount Requirements

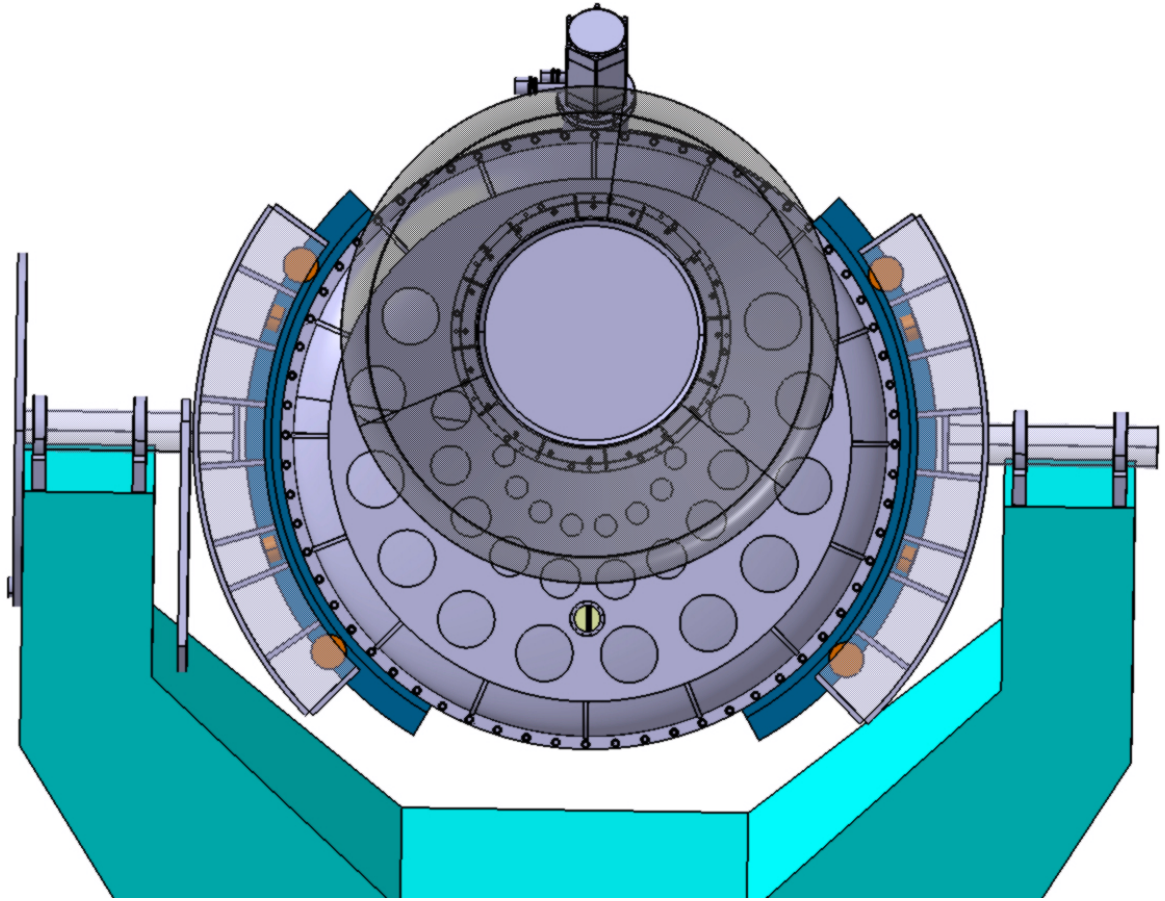
- **Angular Displacements:**
  - Azimuth: Between -220° and 220°
  - Elevation: Between +30 ° and +70° (the horizontal line is 0 °)
  - Optical Axis: Between -15° and +15°, TBC.
- **Angular velocities on each axis**:
  - Adjustable between 0°/s and 10°/s with steps no larger than 0.2 °/s for all axis of rotation.
- **Maximum angular acceleration**: 10°/s2.
- **Maximum absolute angular error**:
  - Azimuth and elevation: 0,05°.
  - Optical: less than 1°.
- **QUBIC Mass**: 632 Kg + 5% estimation extra (cables, He fridges, internal electronics, screws).

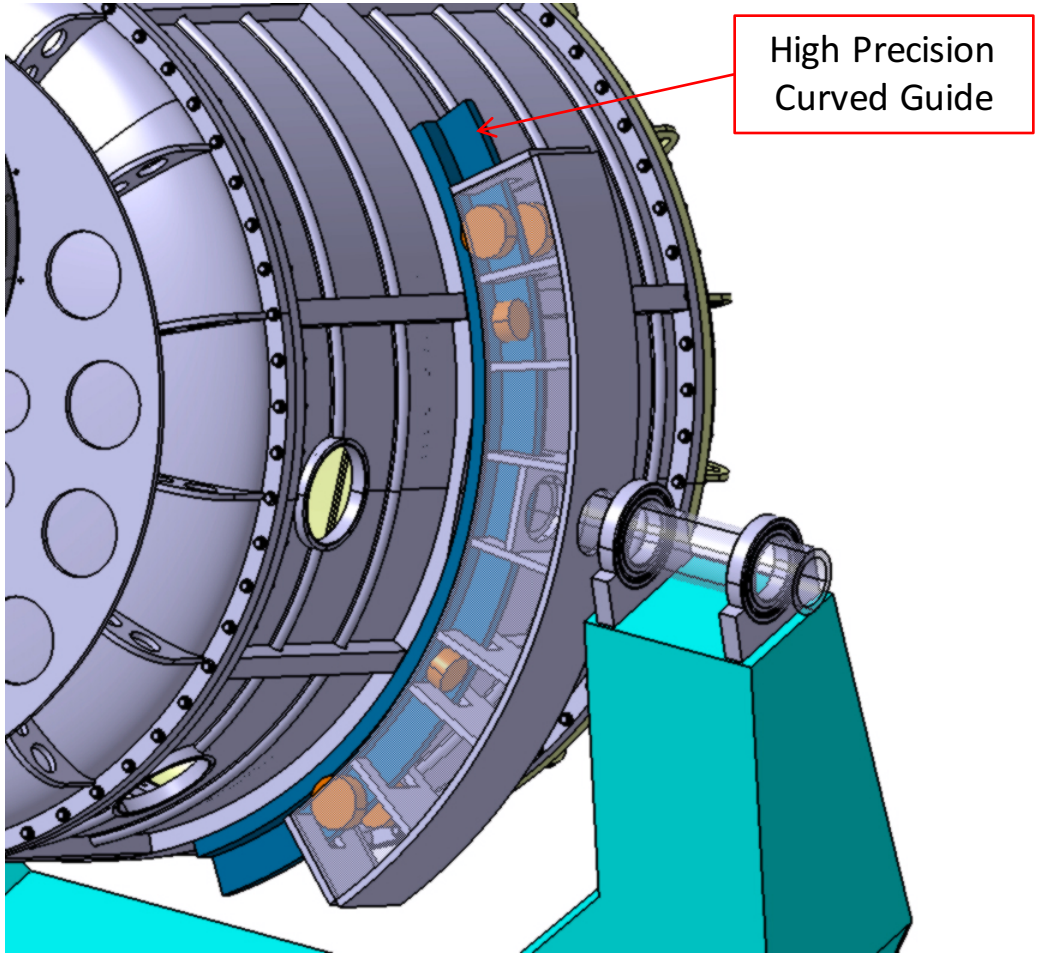
Mount Preliminary Design



Mount Preliminary Design

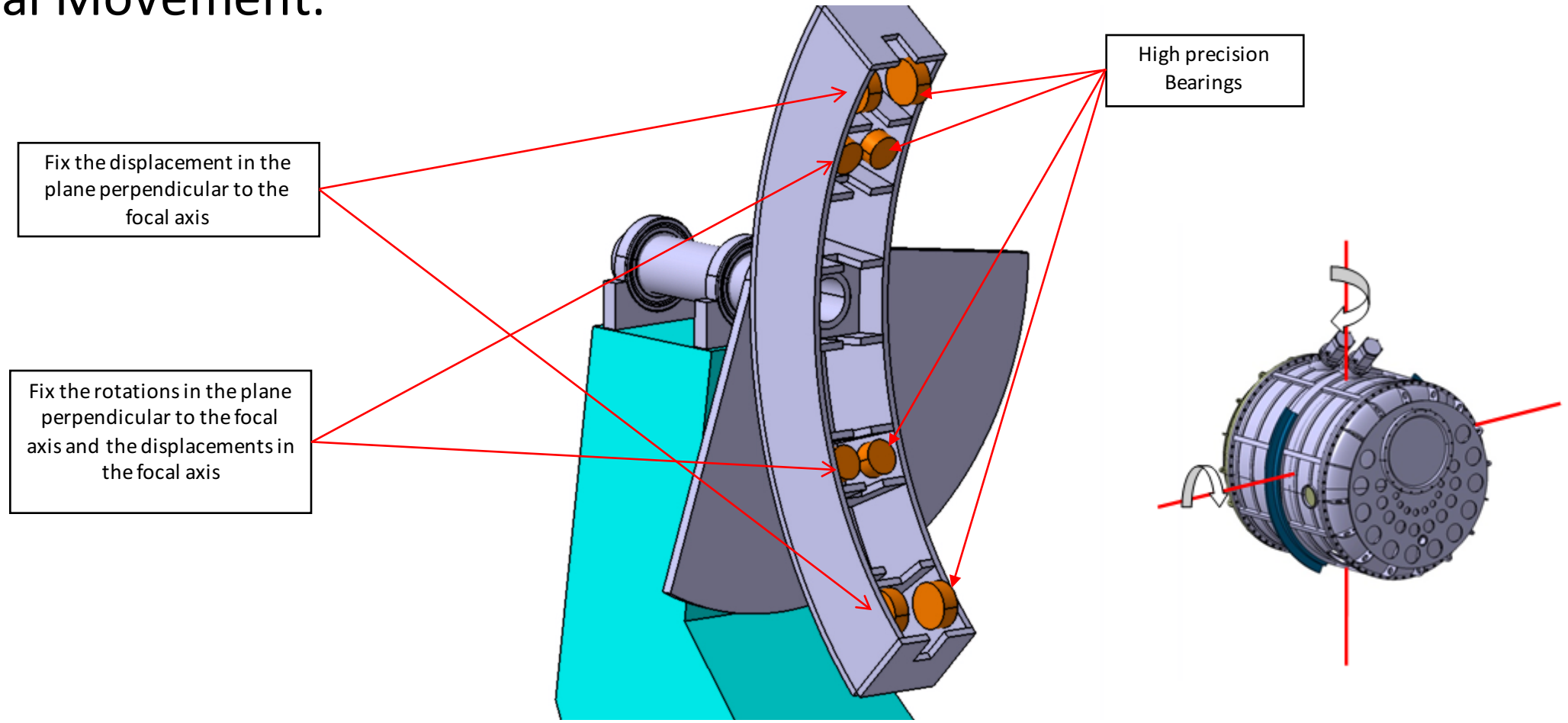
Optical Movement:





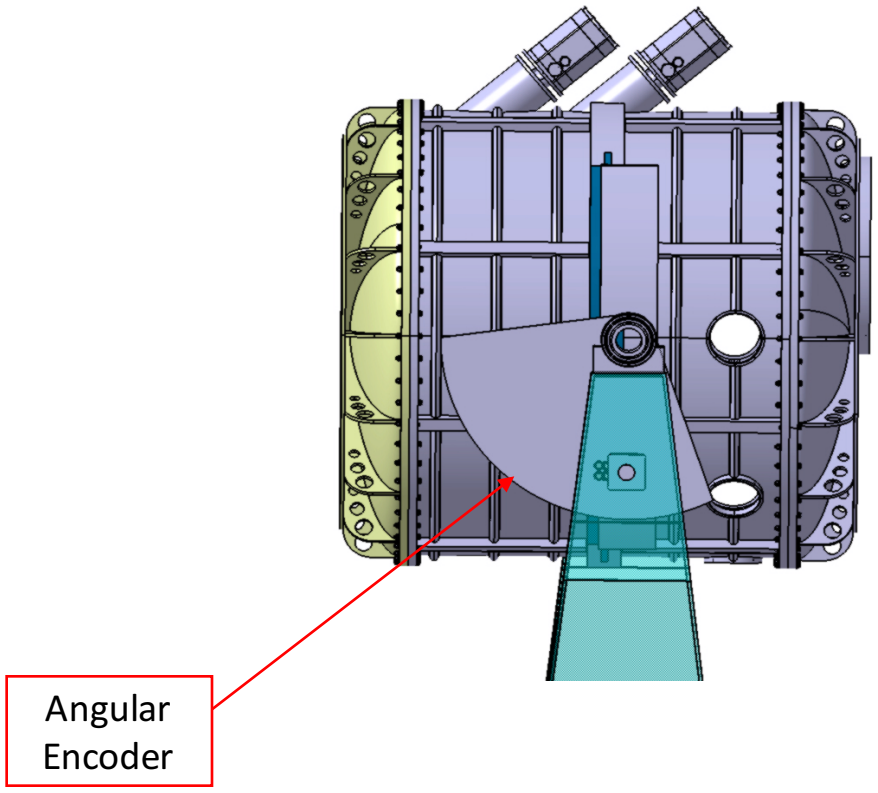
Mount Preliminary Design

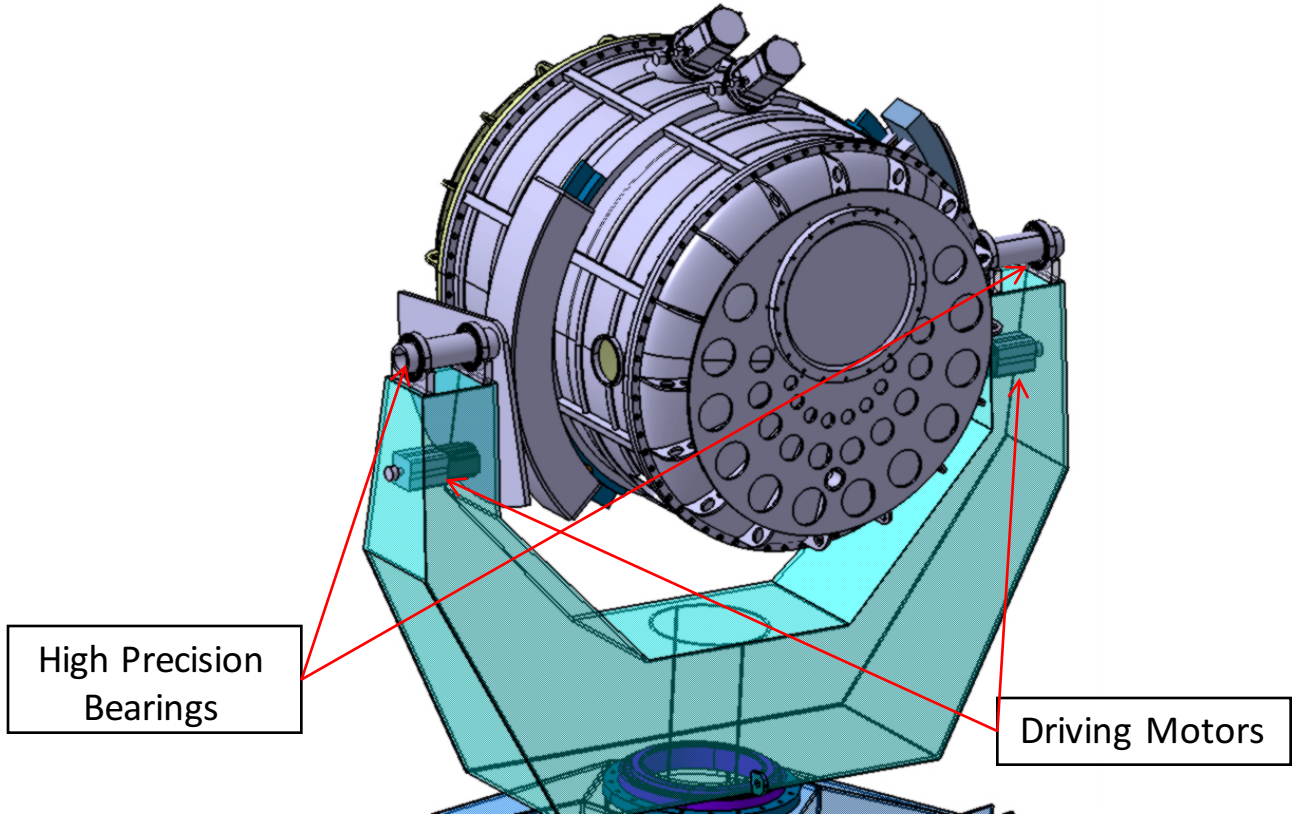
Optical Movement:



Mount Preliminary Design

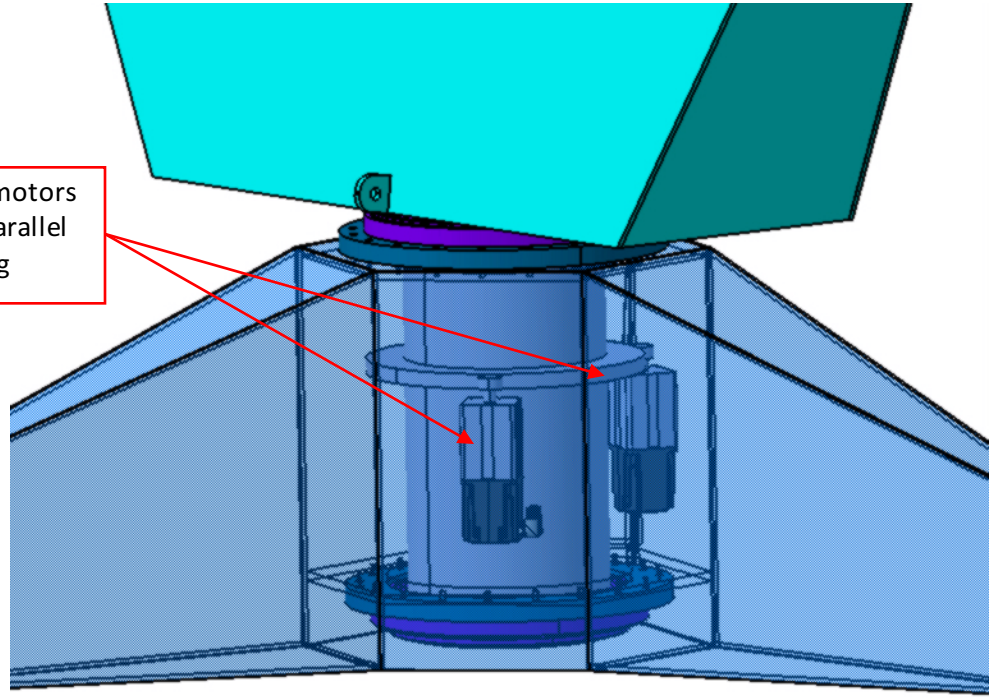
Elevation Movement:

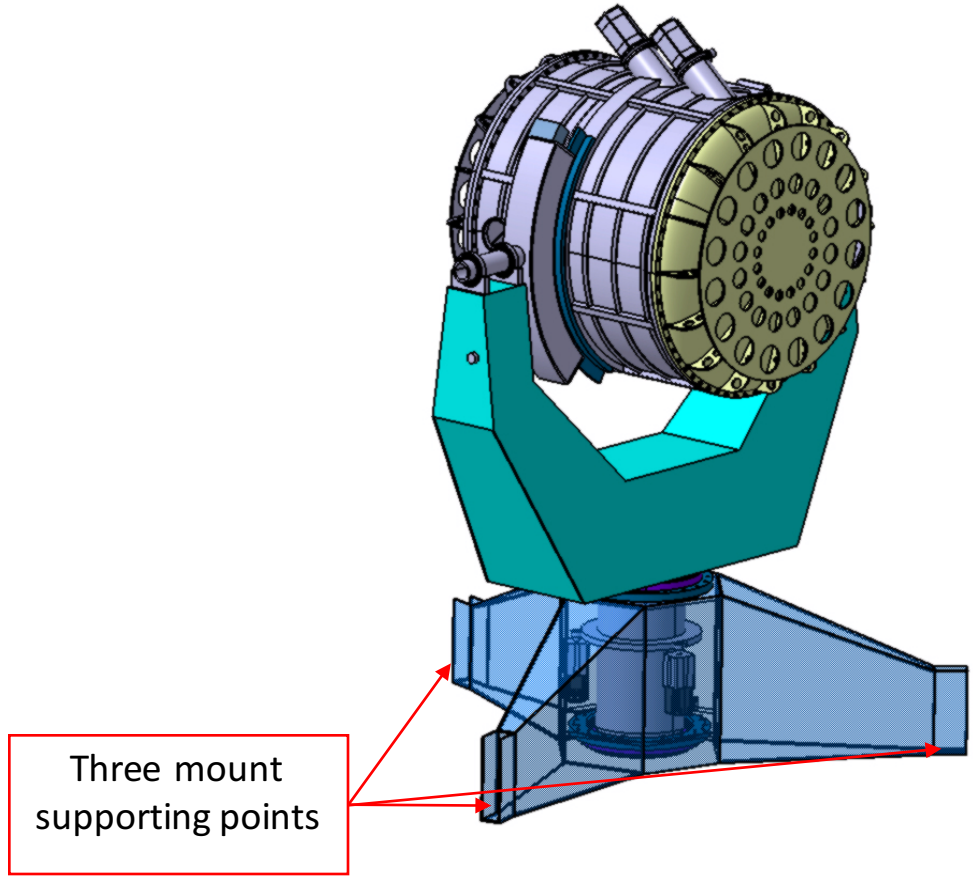




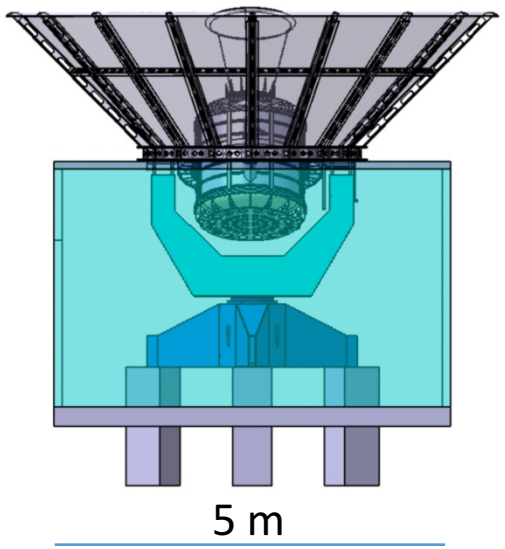
Mount Preliminary Design

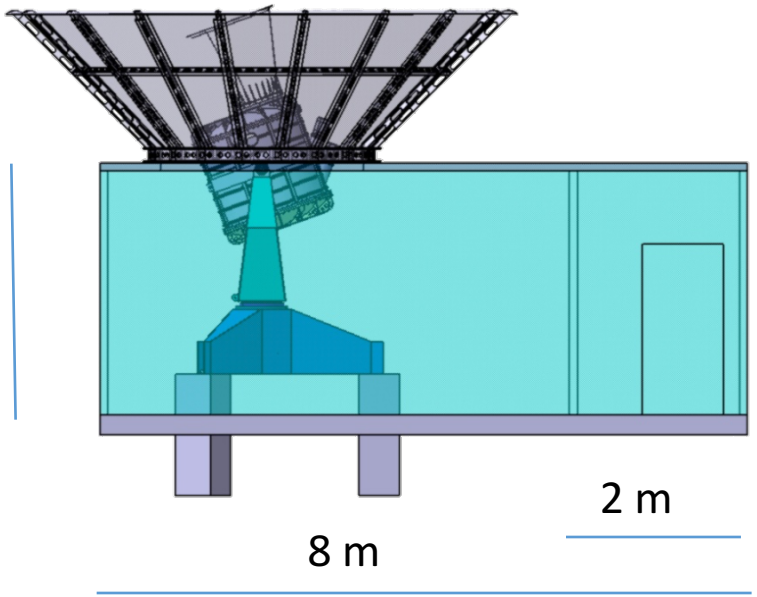
Azimuth Movement:

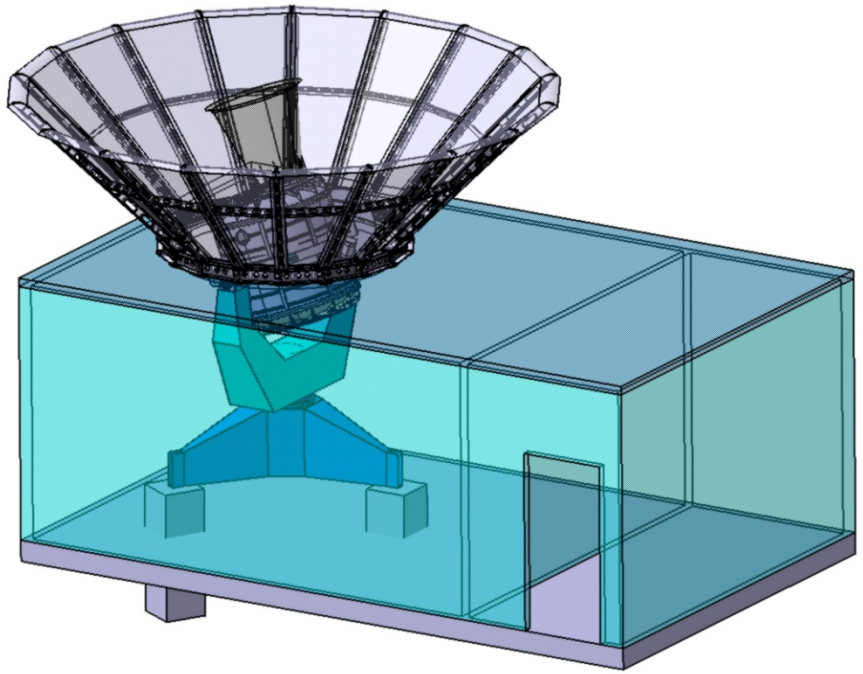




Preliminary building Conceptual Design







From last interaction with Marco, Giuseppe and Elia.

Status of the sub-system : blocking points and schedule

- What is the status of the sub-system ?
  - **DESIGN**
  - **FINISHED by FEBRUARY 2017**
- Inputs / specifications / requirements, needed to finish the detailed design
  - Inertia moments
  - Location of center of gravity
  - Need of rotation around optical axis
- Which other working group should deliver these inputs (see annex 1 for list of main WP) ?
  - Cryostat & Cryogenics
- Time needed :
  - Manufacture the sub-system ? Until February 2018
  - Test the sub-system in your premises before delivery to Argentina ? March-April 2018 in Salta.
- Do you think you can comply to the target schedule? YES! Si, como no!

Interfaces with other sub-systems

- Mechanical: Cryostat & cryogenics
- Are these interfaces currently frozen ?
  - Currently warming up…

Test, Delivery, Assembly, Calibration Operations

- Tests of the sub-system in your premises before delivery at GEMA:
  - The tests will be performed in Argentina. First in La Plata and afterwards in the hangars of CNEA @ Salta
  - Tests with a dummy module in La Plata or Salta (?)
- Delivery to GEMA:
  - The mount parts would be delivered to GEMA by manufacturers.
  - Not specifics requirements for the transport.

- Assembly Operations in Argentina (Salta-San Antonio de los Cobres):
  - TBD

ATRIUM and Documentation

- The documents are in node ATRIUM-129858.
  - The GEMA presentation on the mount design and minutes of the last teleconf (16/09/2016) are there.
- Are these documents definitive ?
  - The mount design is not definitive yet.

Possibly needed tools or utilities for mount

- Assembly Hall
- Mechanical workshop
- Crane or heavy handling systems
- Computers/data acquisition system

Provided by Argentina

Budget (excluding salaries)

	Spendings (type and amount)	Funding (source and amount)	Status of funding (granted / under examination)
2016	-General expenses: 15.000 $AR - Travel to Europe (interaction with Rome basically) 100.000 $AR	(CNEA – MINCyT)	Granted but not yet operational
2017			
2018			

1 euro = 17 AR$

Manpower

Name and responsibility	% FTE 2016	% FTE 2017	% FTE 2018
Ringegni Pablo L (Coordinator-Mechanical design)	20		
Asubal Bottani (Structural design)	40		
Luis Mariano Mundo (Structural design)	60		
Germán Wassermann (Mechanical design)	80		
TOTAL FTE			