New omega shape and fibers irradiation

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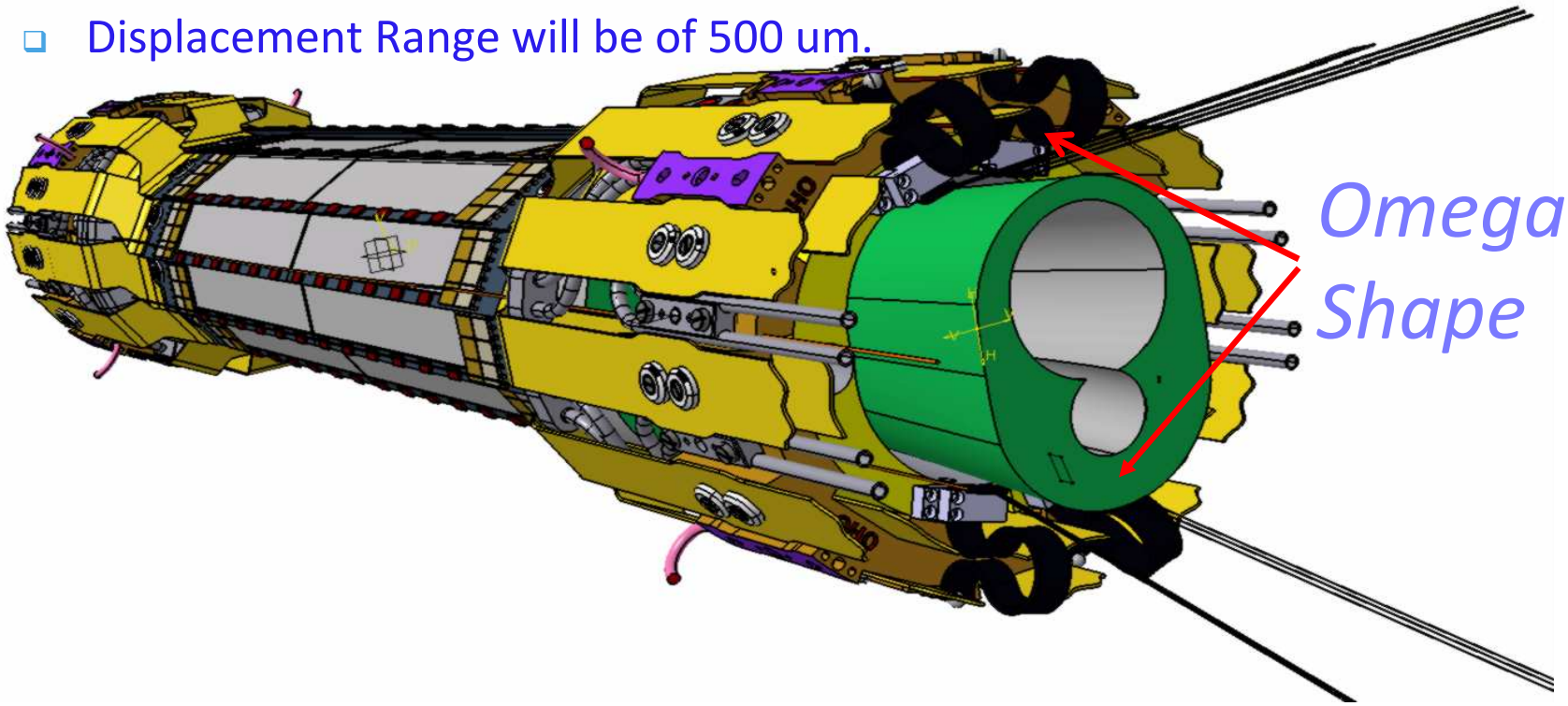
Outline

- Omega shapes
  - Input from MPI group
  - Preliminary design
  - Time schedule
- Measurement PXD volume
  - Fibers Integration
  - Parameters to measure
- New irradiation
  - New samples
- Interaction with HEPHY
- Schedule and outlook

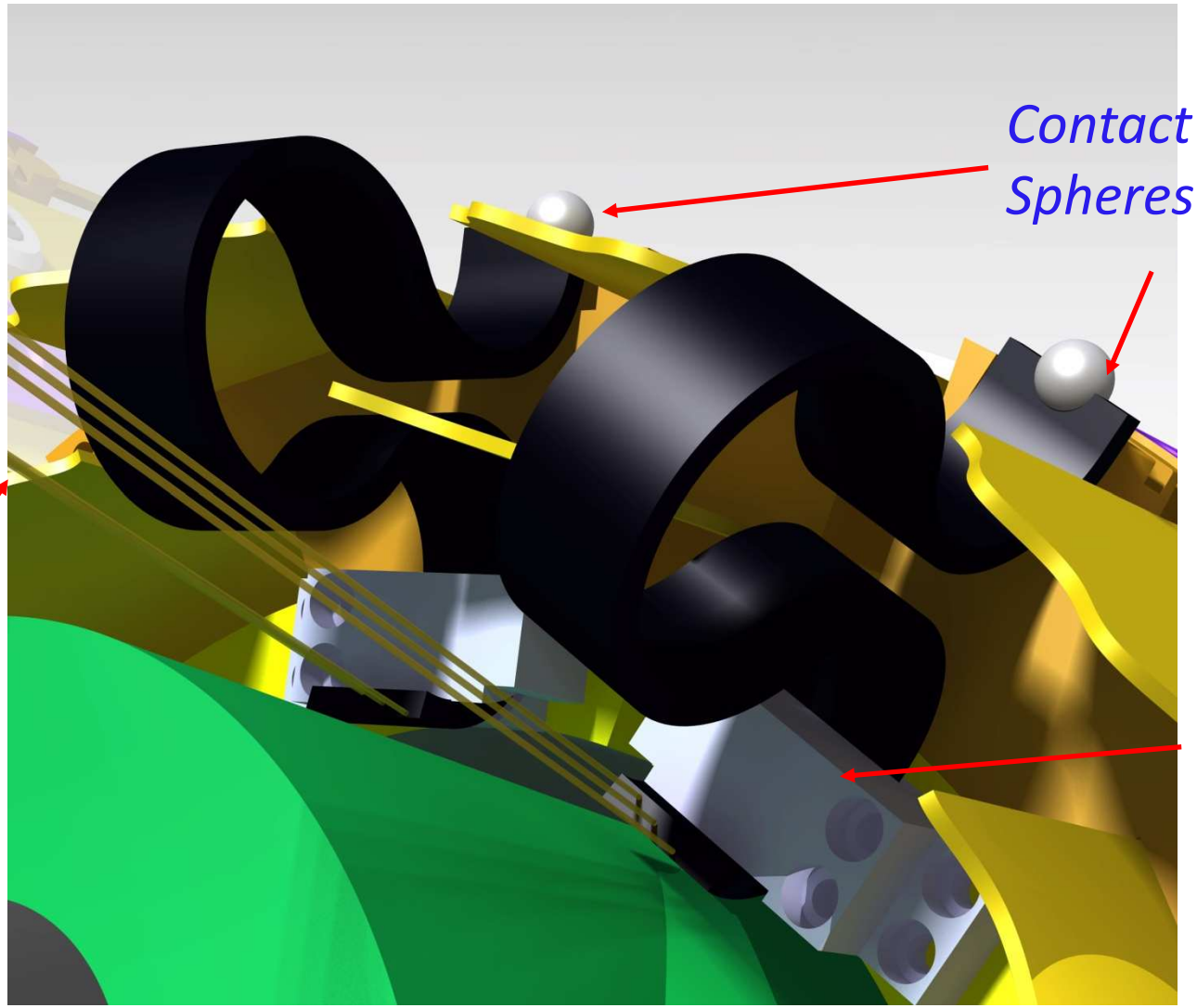
1 – Omega shapes.

Omega Shape : Interaction with MPI

- Talk with Karl Heinz about omegas positioning
  - We found out where to fix omegas
  - The Omega will measure displacements between PXD support ring and SVD support cone
  - The omega will act as a spring . Only one end fixed. The other will have a contact sphere ,to simplify the assembly process.
  - Displacement Range will be of 500 um.

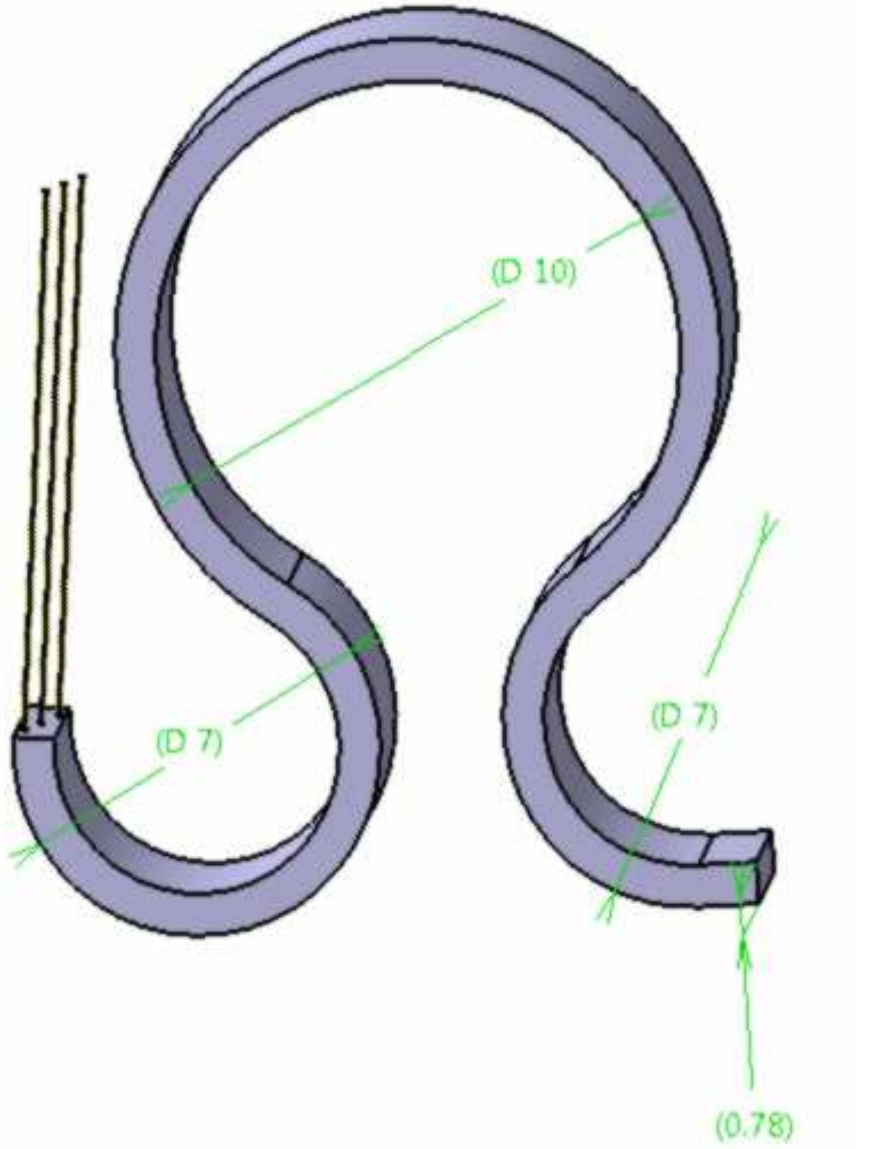


Detail omega shape position

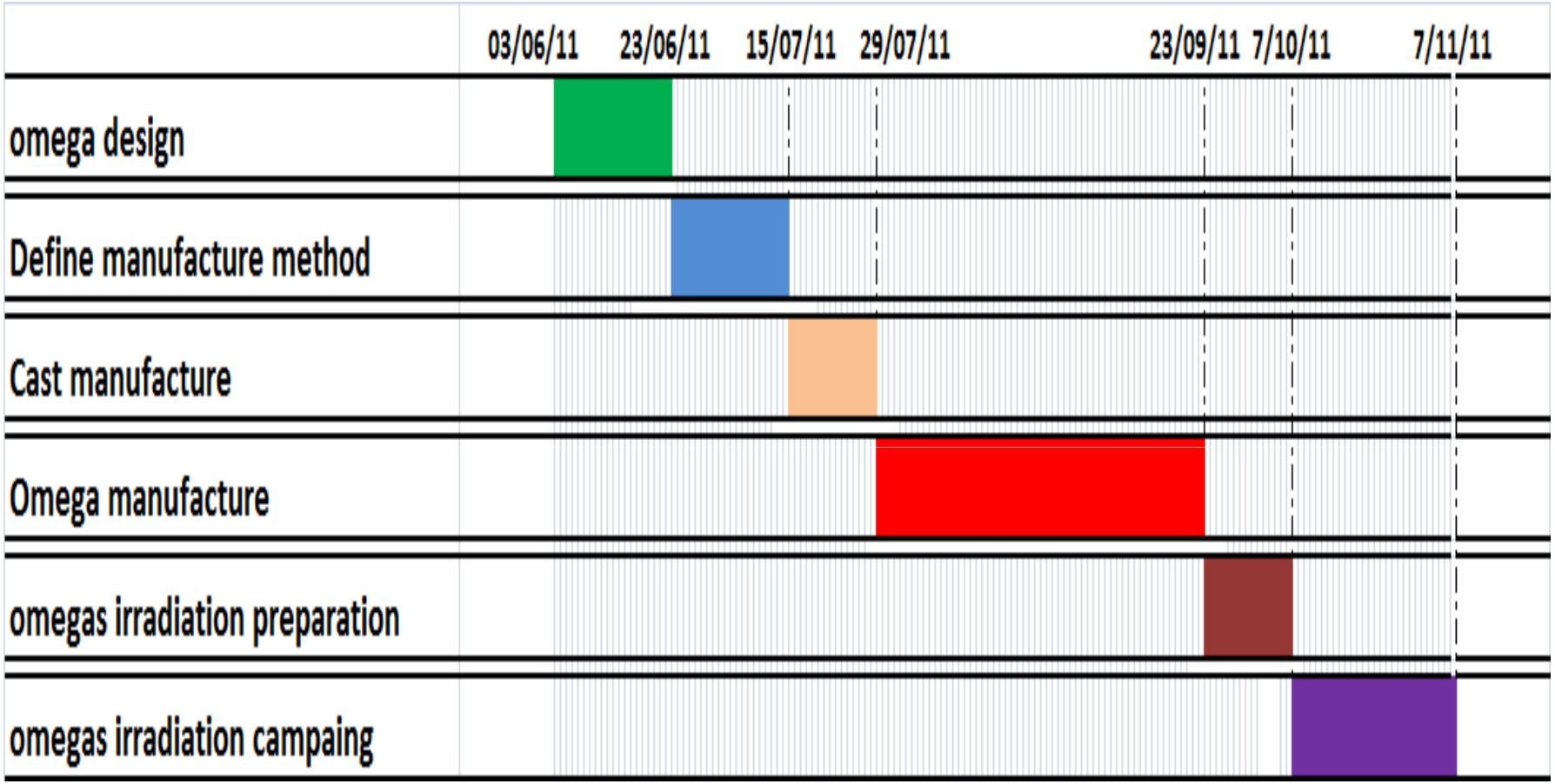


New omega design

- The dimensions of the omega have changed to be integrated properly.
- New design including the Fibers output.
- A preliminary support structure
- It is a preliminary design. It must be simulated and optimized.



Omega manufacturing Time schedule



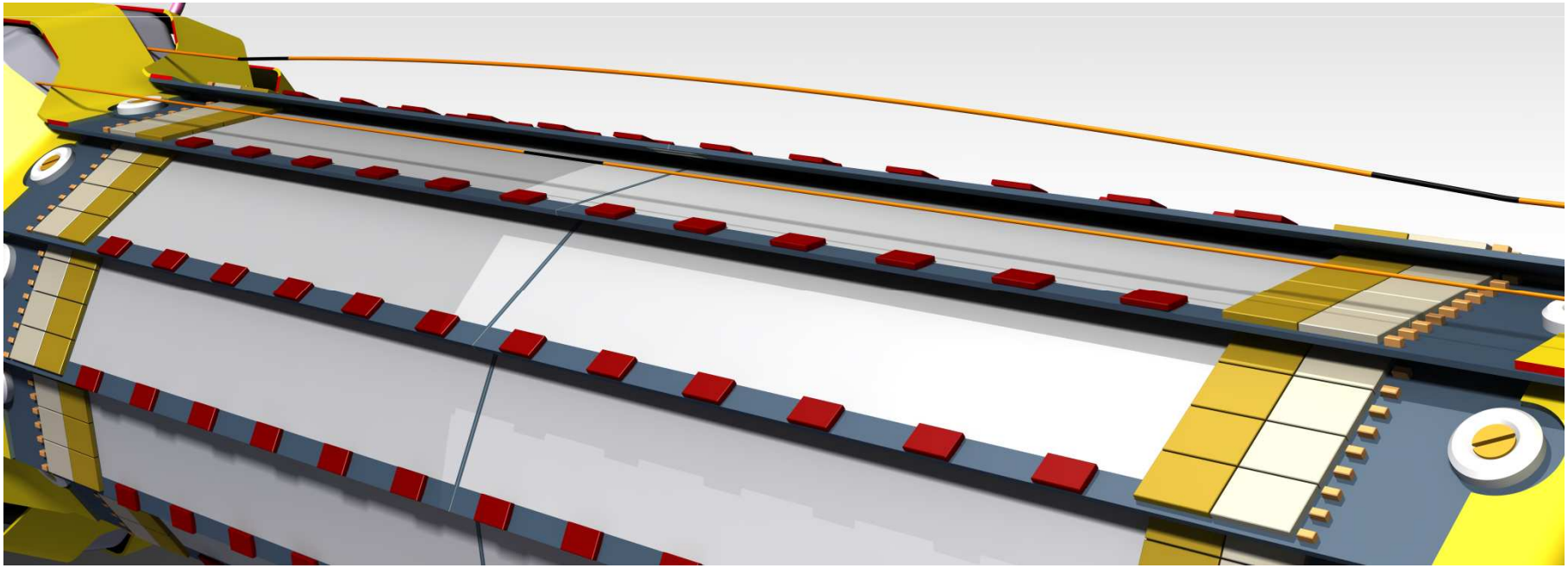
2 – Measurements in PXD volume

Measurements in PXD volume

- There are some parameters which might be interesting to measure in the PXD:
  - Displacement between the two cooling blocks
  - Air Temperature in different points of PXD ladder
  - Air Humidity
- This can be monitorized easily with fiber optics
  - Locking one fiber ends in each side of the cooling blocks with a pre-stressed with a known stress, the displacements between both parts can be measured
  - Introducing an unstressed fiber with FBG-s inscribed, the temperature an humidity can be measures in several points

Integration off the FBG sensors in PXD Volume

- For the integration of this FBG sensors:
  - Karl heinz proposed to make 0.5 mm diameter holes in the suport rings
  - Pass some FBG sensors fron one cooling block to the other



3 – Next irradiation Campaign

Next irradiation Camapaing

- We had fixed next irradiation campaign date: next middle of September
- Planning to irradiate new samples:
  - FBG sensors embedded in the omega-like composite layout(Unidirectional carbon fiber and Glass fiber fabric)

3 – Interaction with HEPHY

Interaction with HEPHY

- Discussed the positioning of the omega with Immanuel: Sugested to increment the length of the SVD support cone to use as contact structure of the omega
- Interested on the measurement of:
  - Temperature distributions inside de SVD volume
  - Humidity change in SVD volume
  - Displacement between two SVD support cones

Schedule and outlook

- The integration of the omegas has been discused with the MPI and HEPHY gropus. A first positioning has been proposed.
- A new omega must be designed and simulated and optimized
- The integration of FBG sensors inside the SVD and PXD volume has been discussed with the MPI an HEPHY
- The final omega is expected to be manufactured by the end of this year.