



Laboratoire d'Annecy-le-Vieux
de Physique des Particules

WA-105

Anode Deck Structure Design status & Interface review

WA105 Technical Board – 20th of July 2016

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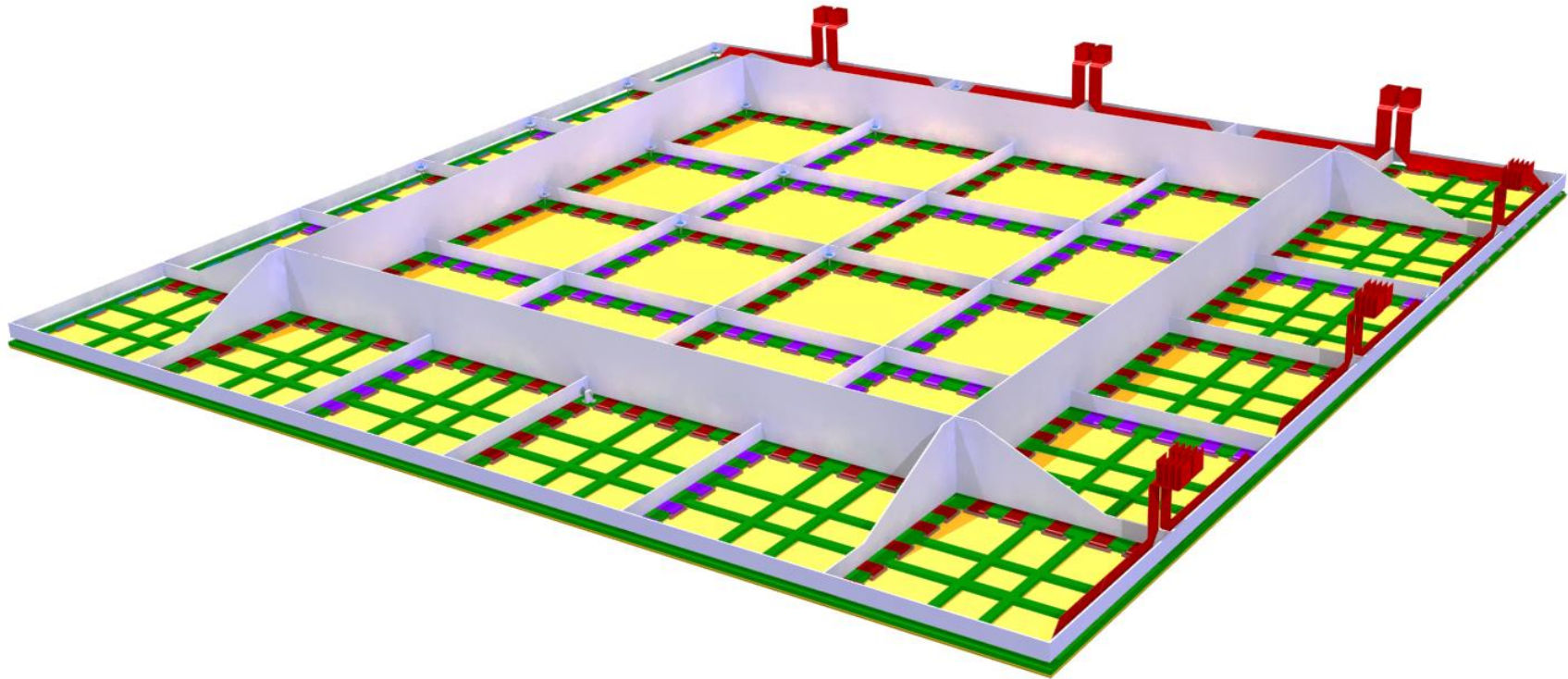


Main interfaces

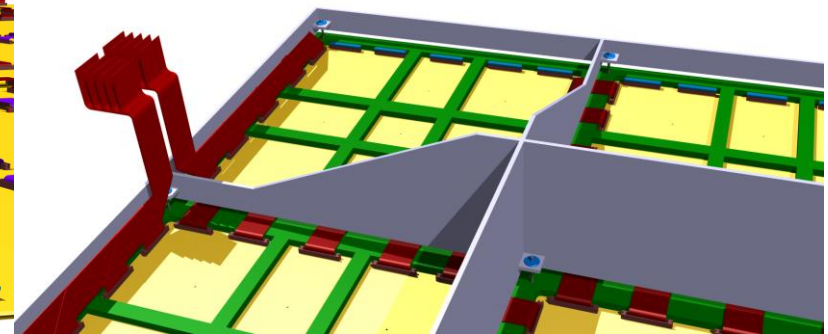
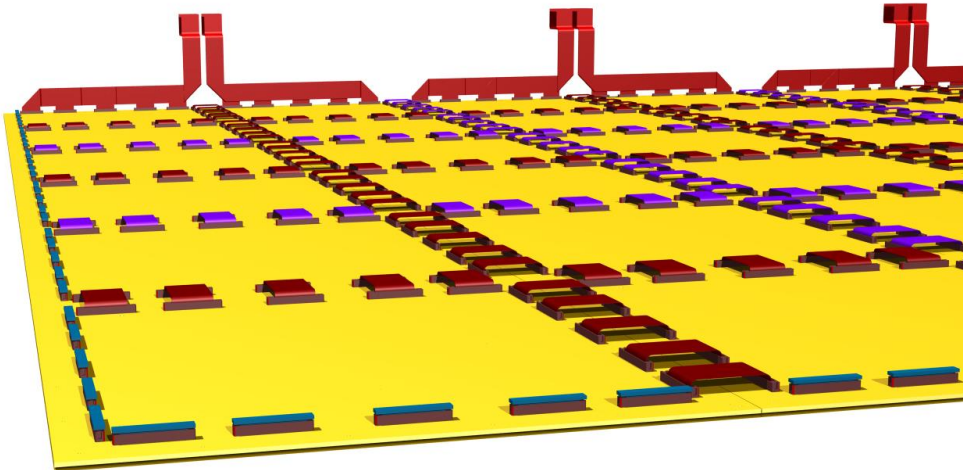
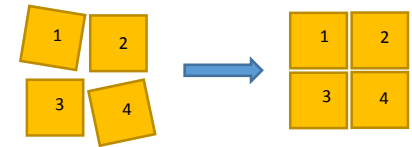
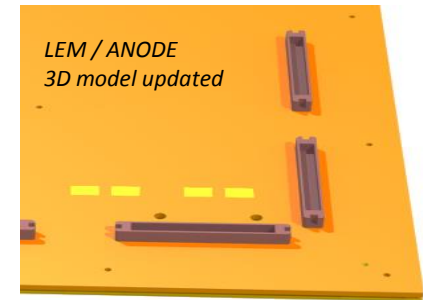
- CRP Design – External dimensions
- Instrumentation – Detection plane connectors
- Signal Feedthrough
- Field Cage
- Extraction Grid – Design, Tooling and Production
- Final Metrology for CRP Planarity
- Suspension Feedthrough
- CRP Transport & Cryostat insertion
- Clean Room Organisation
- Cold Bath Test



- Global CRP geometry shared with Adamo
 - Global geometry and dimensions are fixed,
 - Local solutions have to be confirmed by tests and manufacturers

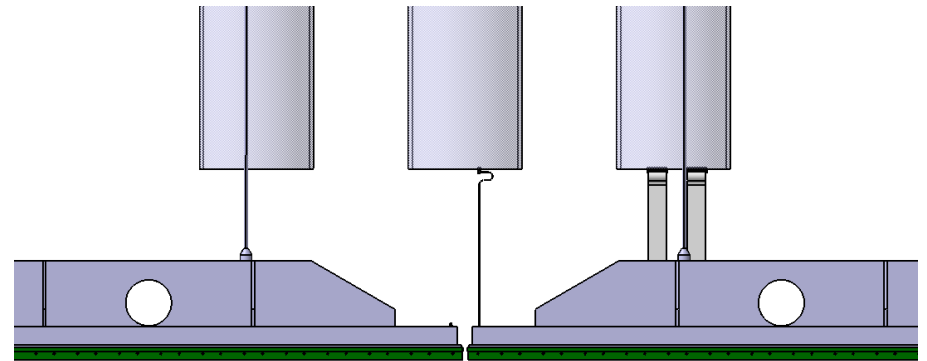
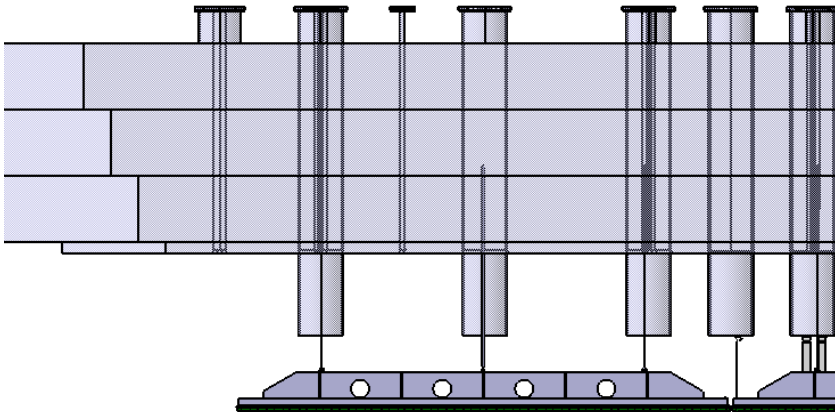


- Detection Plane geometry and connection pattern are in discussion with Adamo, Cosimo, Shuoxing and Sebastien
 - LEM/Anode geometry updated in the CRP 3D model with connectors
 - Test Pulse Cards inserted in the 3D model, geometry to be confirmed
 - General connections, Grid HV supply, signal cables paths...
- To insure CRP vertical position
 - Levelmeters will be added on sides of the 6x6
 - LEM capacitive measurement has to be developed and tested
- To insure CRP lateral position
 - A capacitive measurement system developed at LAPP will be integrated in the extraction grid support
- A meeting will be organised in the summer to fix those points



Signal Feedthrough

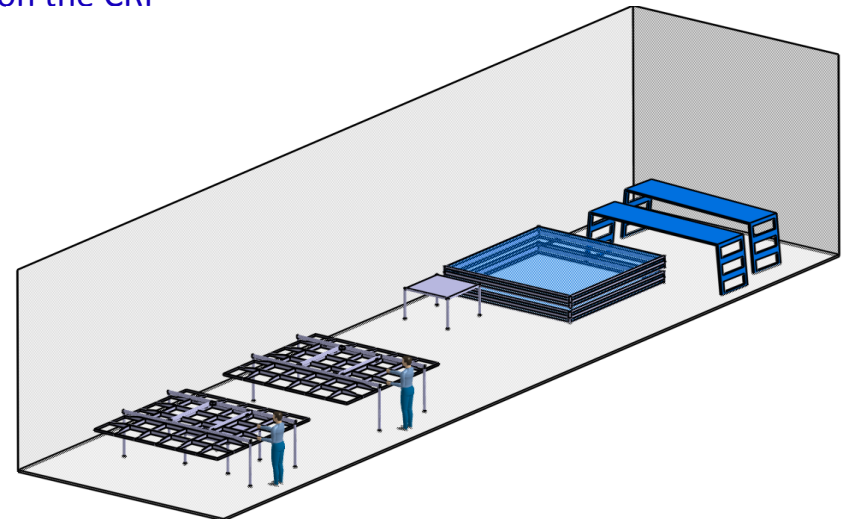
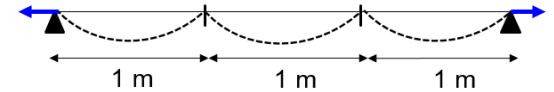
- Chimneys dimension (depth and diameter, connectors) and geometry have to be confirmed
- Connection procedure has to be refined



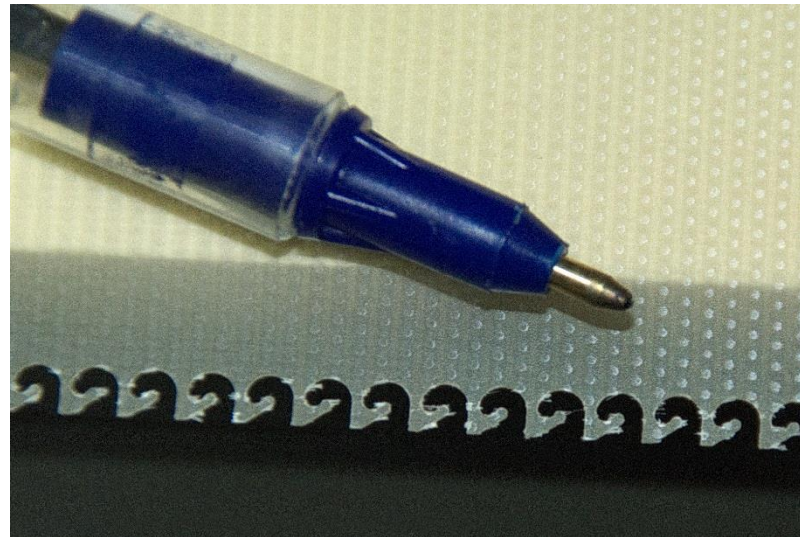
- Discussion with Adamo, Sebastien, Cosimo, Shuoxing, Franco and LAPP electronic team to insure :
 - No geometrical interference between Field Cage and CRP in low position
 - No sparking between Field Cage and CRP Extraction Grid (HV)
- A meeting will be organised soon concerning « electrical » topics

Extraction Grid – Design, Tooling and Production

- Mechanical calculation has been performed to optimize cable tension
 - G10 frame has been simulated to estimate the impact of the tension
- Brazing process has been already validated
- Tooling is currently being designed
- The production will need a collaborative effort to be set up
 - Production in the clean room at CERN, during CRP assembly
 - No storage: brazed parts are directly installed on the CRP

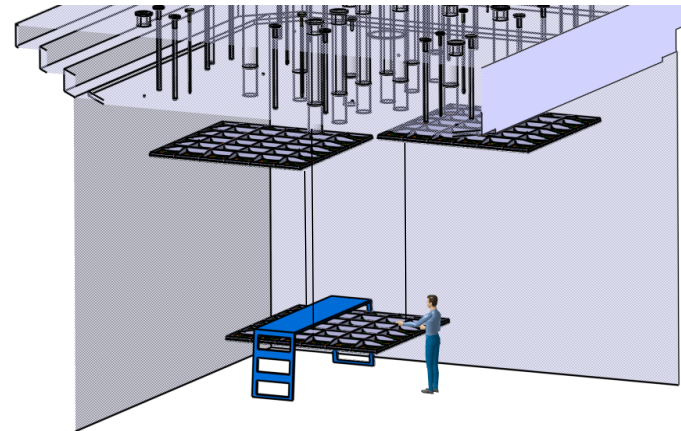
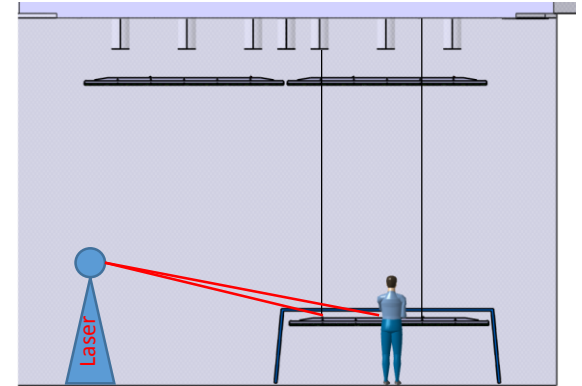


- One G10 comb prototype has been received yesterday :
 - Length : 1m, thickness : 0,25mm, 320 guiding grooves



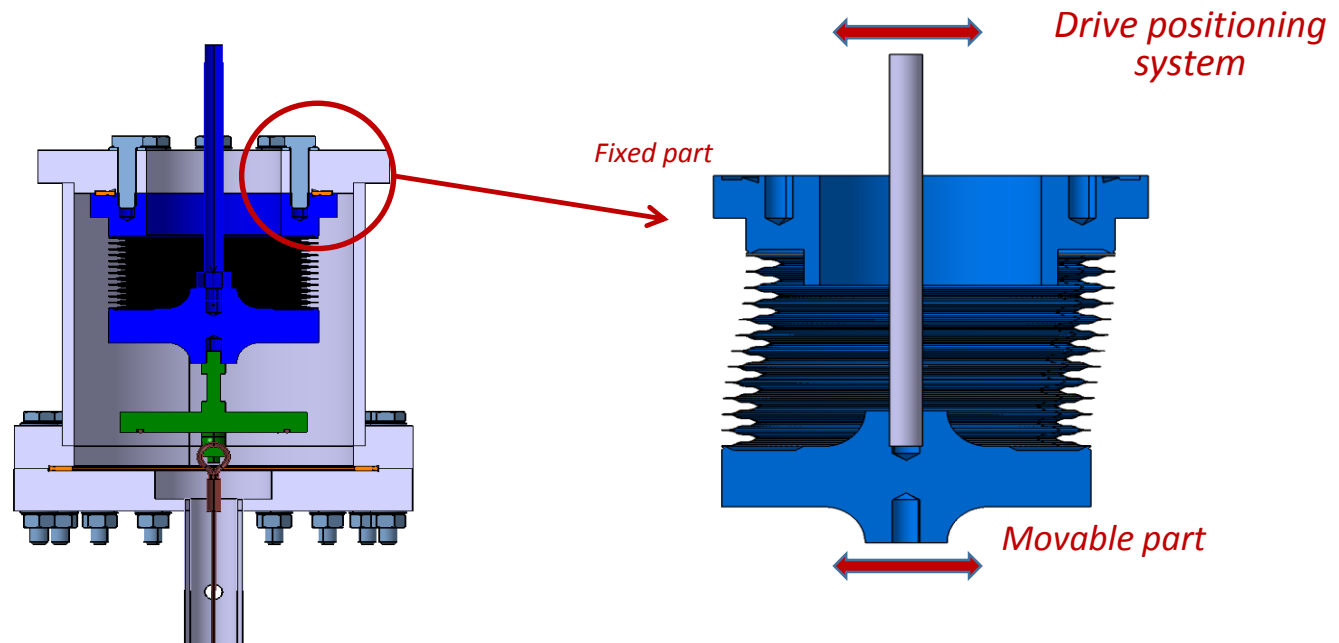
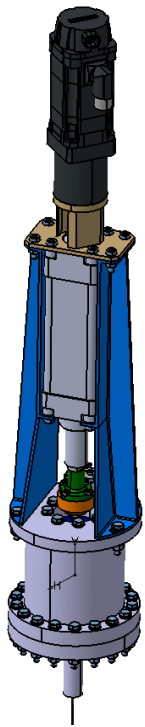
Final Metrology for CRP Planarity

- Will be performed in the cryostat by Dirk's team
- Laser tracking will be used
- Target supports are integrated in the G10 frame on the CRP



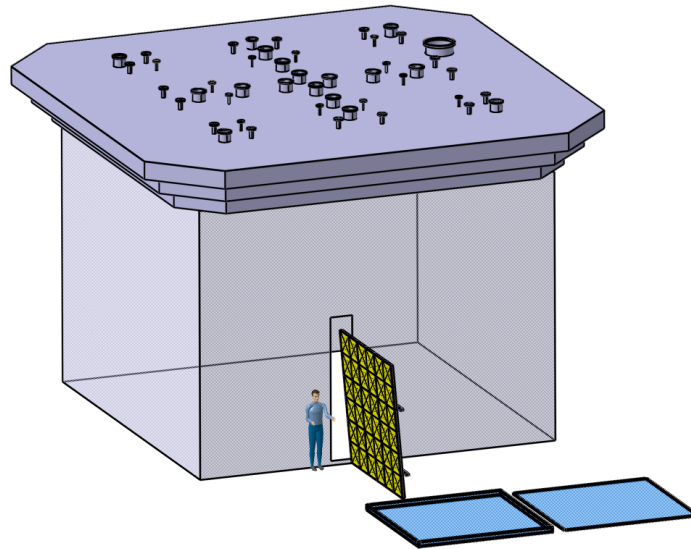
Suspension Feedthrough

- After many investigations, SPFT design is now converging on a safe solution to insure vertical and lateral displacements
- Details and geometry will be presented in a future TB



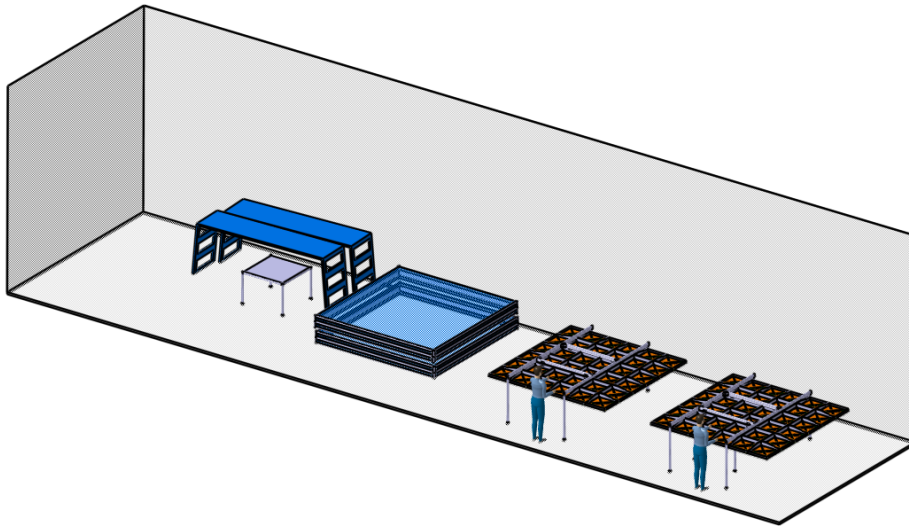
CRP Transport & Cryostat insertion

- CRP handling structure has to be designed
- For the moment, no discussion about the transport box design has been started
- Procedure for transport and insertion in the cryostat has to be discussed with Adamo and CERN
- CRP handling in the cryostat should be defined with the responsible team (Who? CERN?)



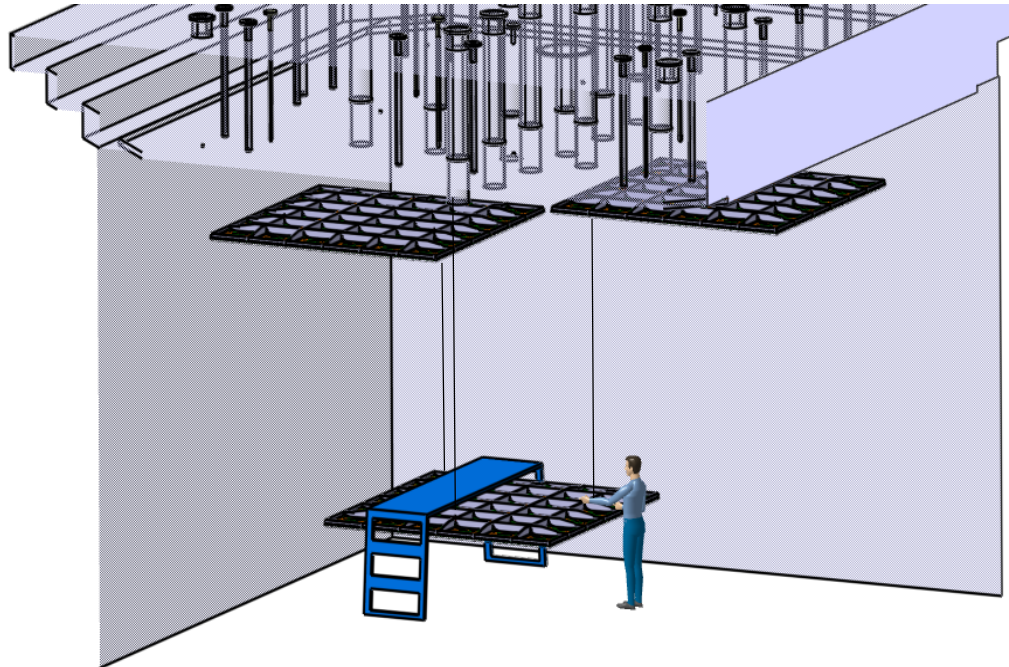
Clean Room Organisation

- Should be discussed with the different actors when production and assembly processes are validated



Cold Bath Test

- To be organized in the cryostat



Conclusions

- CRP design work follows the expected schedule
 - Intermediate design incorporating all parts is shared with Adamo and with the collaboration
 - The final design should be completed by mid-December
- The CAD version is updated regularly to take into account the latest information available from the various interfaces

It is very important to address globally the various interfaces presented here.
It is urgent to set up an active communication among the concerned actors.