

Minutes

EN Meeting for HL-LHC CRAB CAVITIES

Monday, 26th October 2015

Room 376/1-020

Scope: regular meeting for the HL-LHC CRAB CAVITIES (WP4) Project at EN/MME

Attendees: Kurt Artoos, Elisa Cantergiani, Ofelia Capatina, Teddy Capelli, Luca Dassa, Konrad Eiler, Marco Garlasche, Laurene Giordanino, Norbert Kuder, Raphael Leuxe, Carlo Zaroni

Ofelia reminded everybody of the oncoming review (10-11 November, 112-R-028). Several presentations are responsibility of the group:

<https://indico.cern.ch/event/435319/>

Also, in the scope of the HiLumi-LARP annual meeting 2 parallel session will be dedicated to the Crab Cavities (WP4). Indeed, anyone is free to join any other talk, if interested.

Cavities:

- Size of Nb plates to be defined today in another meeting
- Biggest dimension possible to avoid very time consuming issues in the future
- Material to be procured with a special speedy tendering
- 50x50 cm plates in 4 mm available for some prototyping
- Drawings for port extremities have been put in order
- Manufacturing test to be carried on with worst-case geometry (i.e. stress field representative of the stress at the most bended part of the cavity)
- Four companies answered to the expression of interest:
 - BMAX
 - ETTORE ZANON S.p.A
 - RESEARCH INSTRUMENTS
 - 3D-Metal Forming BV

Thermal Shield:

Carlo showed the analysis on a 3D concept of the Thermal Screen. All the info will be passed to Nik, in order to define the design.

The analysis show that the temperature uniformity requires a dense network of the pipe in which gaseous helium flows. The thermal behaviour is further improved by using plates in Al1060 ("pure" aluminium) instead of Al6061. In fact, the conductivity is 4 x higher in the first case. A reinforcement system will be therefore included to mitigate the risks of the loads applied during assembly.

Helium tank prototype:

Assembly is ongoing and is expected to finish for the 28/29th .

HOM:

Marco gave samples of material to Konrad for UT analysis.

Tuning:

Kurt said he will consider using a softer tube for the pretuning (i.e. the tube that goes from the tank wall to the cavity). This would allow a better resolution. However, the effect on the cavity stress must be assessed.

Actions

- Prepare some 3D models/pictures or a remote connection for the session on Crab Cavities of Friday → Teddy
- Define Nb plates dimensions → Laurene, Marco, Raphael
- Material procurement → Paula, Konrad
- Interface with Nik in order to coordinate the efforts on the design of the thermal and magnetic shield → Carlo
- Update the 3D model of the cryomodule (with thermal shield) in order to give it to Nik → Teddy
- UT analysis of Nb for HOM couplers → Konrad
- Evaluate an update of the pre-tuning system design → Kurt

Next meeting: Monday the 2th of November in room 376/1-020.

Minutes taken by Carlo