

## Minutes

### EN/MME Meeting for HL-LHC CRAB CAVITIES

Monday, 24<sup>th</sup> November 2014

Room 376/1-020

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

Attendees: Kurt Artoos, Rama Calaga, Ofelia Capatina, Teddy Capelli, Federico Carra, Luca Dassa, Norbert Kuder, Raphael Leuxe, Paula Freijedo Menendez, Carlo Zaroni

#### General

Next meeting with LARP collaboration and Niowave: December the 5<sup>th</sup> at 4pm (376/1-020).

Rama updated everyone on the 4th Joint HiLumi LHC-LARP annual meeting held last week in Japan. The current plan provides the removal from SPS of the COLDEX experiment in December 2016. Integration of Crab Cryomodule will follow afterwards during the same Christmas break. It is possible that another place is chosen in SPS for mounting the Cryomodule, in order to leave COLDEX at its place. This is still to be discussed and all the group will be kept up to date.

The production of Crab Cavities for LHC will have to follow a very tight deadline, in order to have everything ready in 2022 (with some contingency on the 2023 deadline). Rama highlighted that this means the design choices in the scope of SPS test are also quite critical for LHC.

Finally, a cost review of the project with an external committee will be held in March 2015.

#### DQW

Raphael updated on the status of the bare DQW cavity. The specification drawings, which are the only official outcome issued by CERN, are ready. Ofelia underlined the need of starting the approval procedure. The list of persons involved in this procedure is defined by Rama and Raphael (Action → Raphael, Rama).

Kurt and Raphael are contacting few providers for the needed titanium bellows (Action → Raphael, Kurt).

The design of the Helium tank is proceeding. References are now both on the tank itself and on the cavity flanges. The wire measuring system is still a draft. However, Kurt raised a concern on the support of the sensors shown in the draft. It looks like having them connected to the tank instead of the flange (where a long supporting system is needed) might be a better solution.

Raphael also updated the design of the tank according to the comments of the previous meeting. He will contact the workshop in order to double check its feasibility (Action → Raphael, Kurt).

The tuning system has been updated as well, although it still needs some work. Among all, the stiffness has to be increased. Kurt observed that the current design might be hardly weldable at the interface with the Helium tank. At the same time, the number of screws on the rough tuning system appears a bit low and needs to be fixed (Action → Raphael).

Finally, Rama observed that the tank is still in need of a proper handling system (such operations are not allowed on the flanges). Raphael is going to define that in the future, accommodating the requirements of the assembly procedures (Action → Raphael).

## RFD

The specification drawings of the bare RFD cavity are almost ready and will follow the same approval procedure of the DQW cavity (Action → Teddy).

## HOM

Teddy updated on the various designs of the HOM tube and hook. The top part of the tube (the horizontal plate that constraints the hook) is under discussion and requires a final definition among different design choices. The distance between the plate and the top of the horizontal tube will be clarified by Rama after hearing Binping (BNL) opinion (Action → Rama). Meanwhile, Teddy will double check the constraints on the HOM height given by the Cryomodule overall dimensions (Action → Teddy).

The welding between the hook and the top plate will be discussed in detail in the future. However, the current proposal foresees a welding mode that on one hand is not used at CERN and may not guarantee good surface continuity and on the other hand has mounting advantages.

Teddy quickly sketched his idea on the assembly of the HOM, in which the vertical tube is divided in two longitudinal halves that allow an easy access of the hook as a unique piece.

Ofelia needs to give a feedback to STFC in UK (Action → Ofelia), but that will be done only once the feedbacks on the top plate are provided. So far, it has only been highlighted that

the hook should have a mandatory conical shape at the top edge of the lateral cylinder part of the hook itself.

Finally, the lines providing 2K in the HOM have still to be designed (Action → Raphael).

## **Vacuum Vessel**

Norbert detailed the analysis of the deformation of the vacuum vessel. His analysis specifies the load applied on each bolt. The overall results have the same order of magnitude of the previous analyses. Part of the behaviour still requires to be understood, but this does not appear critical at the moment. Ofelia concluded saying that the current design should be sufficiently mature for starting a discussion on manufacturing with the workshop (Action → Carlo, Ofelia).

Next meetings will be held in room 376/1-020.

*Minutes taken by Carlo.*