



Joint WP2/WP8/WP12 Meeting

Tuesday 18th May 2021, 15:00 – 16:30

Chairs: Rogelio Tomás, Francisco Sanchez Galan, Elias Métral

Speakers: Benoît Salvant, Pablo Santos Diaz

Participants (zoom): Giuseppe Bregliozzi, Xavier Buffat, Riccardo De Maria, Ilias Efthymiopoulos, Paolo Fessia, Dobrin Kaltchev, Leonel Marques Antunes Ferreira, Michele Modena, Nicolas Mounet, Giovanni Rumolo, Mauro Taborelli, Carlo Zannini

AGENDA

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| General information (Rogelio Tomás) | 2 |
| Impedance impact of Y chamber material (Benoît Salvant) | 2 |
| Decision on Y-Chamber coating vs impedance (Pablo Santos Diaz) | 2 |
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MEETING ACTIONS

Francisco Present baseline proposal to the TCC after receiving cost of coating only the cylindrical tubes of the Y chamber

GENERAL INFORMATION (ROGELIO TOMÁS)

Rogelio reviewed the minutes of the [191th WP2 meeting](#) on May 4th, which were circulated (no comments received).

The BPM specification document is not converging for certain specification between WP2 and experiments requirements and what BI can provide. **Rogelio** proposed a further iteration before going to the TCC to present the status.

Xavier updated the stability threshold of witness bunches with a small increase of the octupole current.

The schedule of the meeting then followed as foreseen.

1 IMPEDANCE IMPACT OF Y CHAMBER MATERIAL (BENOÎT SALVANT)

Benoît represents the impedance WG. All current Y-chambers are coated or made of bulk copper. Only pipes above 130 mm ID do not have coating.

Francisco asked if all parts are coated including the conical part, **Benoît** confirmed that this was the information he got from J. Sestak.

For the Y-chamber, it was already proposed not to coat the conical part to simplify the manufacturing process. During the engineering review of 2021, it was requested to evaluate the impact of removing the coating for the entire chamber, to further reduce costs and complications.

A very thin layer can be beneficial to reduce the contribution to the high frequency part of the impedance. Globally the impact on stability from this change is anyway small even taking into account the most pushed β^* (slides were updated after the meeting to take into account the most critical cases). If we accept not to coat, this will make the Y-chamber not as optimized compared to other chambers in HL-LHC but even compared to current LHC Y-chambers, requiring a justification.

2 DECISION ON Y-CHAMBER COATING VS IMPEDANCE (PABLO SANTOS DIAZ)

Pablo introduced the concept of the TAXN, the design of the Y-chamber and presented an evaluation of three coating options in terms of costs and benefits: bulk copper, full coating, two-leg coating.

In summary a bulk copper chamber requires a full redesign and validation, which for the current design took 2 years. The option of coating the two legs is significantly easier than other options, however cost estimates are not available yet.

Francisco proposed to accept the option of coating only the two legs. **Giuseppe** raised the point of additional potential complication due to the possibility that pipes would need to travel. **Francisco** clarified that the main plan is to produce the Y-chamber uncoated in Russia and then do the copper coating at CERN. The main issues of the coating proposals are cost, schedule and risk, but it is technically feasible. There is however significantly more experience for the two-leg coating, but new tools still need to be produced. For the two-leg coating option, there are indeed several manufacturing choices that need to be agreed between CERN and Russia that are difficult to evaluate presently. Additional discussions need to be carried out.

Ilias pointed out that there were many discussions for the past chambers of TAS and TAN on the mechanical tolerances. **Ilias** also warned about possible issues with activation and high temperature for the coating, but Leonel explained that the risk is taken into account. Francisco and Giuseppe replied that mechanical tolerances are well specified and monitored and, concerning temperature, this Y-chamber is compatible with high temperatures as it needs to be baked to 250 deg.

In summary, WP8 will present that the baseline will be two-leg coating (**Action: Francisco**) and, in case, budget reasons could drive a decision of not coating the Y-chamber.

3 ROUND TABLE (ROGELIO TOMÁS, FRANCISCO SANCHEZ GALAN, ELIAS MÉTRAL)

Next meeting is foreseen in two weeks.

Reported by R. De Maria and N. Mounet