WP 16 Video Meeting

Date: 25.03.2019

Time: 11 to 12 a.m.

Hosted by: CERN (A. Rossi/S. Sadovich)

Invited: A. Rossi, S. Sadovich; P. Apse-Apsitis; O. Meusel; K. Schulte-Urlichs, D. Ondreka

Participants: A. Rossi, S. Sadovich; P. Apse-Apsitis; K. Schulte-Urlichs, D. Ondreka

Indico-Page: https://indico.cern.ch/event/807559/

1 WP16 Status, Milestones, Deliverables

D. Ondreka informs about upcoming milestone and deliverable reports. There are four reports due this year:

Code	Task	Resp.	Topic	Due date
MS54	16.4	CERN	Design of test stand and beam diagnostics	30.04.2019
MS55	16.2	GSI	Conceptual design of integrated set-up	30.04.2019
MS56	16.3	IAP	Engineering design of gun and modulator	31.07.2019
D16.1	16.3	GSI	Electron beam dynamics studies	30.04.2019

Remark: Deliverable reports have to be sent to the ARIES project leaders one month in advance of the official due date since an internal review is required before the report is published.

Due to personnel issues at GSI, the MS55 report can't be completed in time. M. Vretenar has been informed about this. The milestone will be shifted by about one and a half year. D. Ondreka will write a justification to M. Vretenar.

MS56 and D16.1 are expected to be completed in time, even though for D16.1 the internal deadline will be hard to meet.

D. Ondreka reminds P. Apse-Apsitis of the fact that the design of the final power modulator needs to be included in the MS56 report. More details will be discussed during the WP16 parallel meeting at the ARIES Y2 meeting.

A. Rossi informs that the MS54 report is basically ready. She agrees to distribute it prior to the Y2 meeting in the WP.

A. Rossi asks for a list of milestones and deliverables in WP16. D. Ondreka will send a list around.

2 Task reports

2.1 Modulator design (P. Apse-Apsitis)

The modulator for the mini-gun is ready for testing at IAP. A signal generator has been implemented allowing for generation of all required waveforms (Gaussian, Gaussian flat-topped, Gaussian double-bump) with frequency sweep in the range 400 kHz to 1 MHz. A change of modulation amplitude during the sweep is not yet possible but will be implemented soon. In any event, this functionality is sufficient for the test at IAP.

D. Ondreka asks P. Apse-Apsitis to provide some material (pictures, screenshots) demonstrating the present status of the mini-gun modulator including signal generation for the WP16 status presentation at the Y2 meeting.

A date for the mini-gun test at IAP needs to be agreed. Tentatively, the week after the Y2 meeting is proposed (calendar week 16). However, this date still needs to be confirmed by IAP.

For the design of the final modulator, RTU needs an electrical mock-up. The question how such a mock-up can best be provided to RTU will be one of the main topics for the WP16 parallel meeting at the Y2 meeting.

2.2 Electron beam studies and SC gun design (K. Schulte-Urlichs)

K. Schulte-Urlichs presents an image of the present status of the SC gun design. The gun is designed to fit into an aperture of 185 mm. This is sufficient for integration of the gun into the GSI solenoid as well as the gun solenoid at the CERN test stand. Since the lengths and apertures of the two solenoids are slightly different, it is expected that adaptations to the support structure will have to be made, though.

Since the presented image did not contain dimensions, K. Schulte-Urlichs agrees to send the present design in the form of a STP-file to S. Sadovich.

It is agreed that integration of the SC gun into the CERN test stand will be one of the major topics for the WP16 parallel meeting at the Y2 meeting.

A. Rossi pointed out that, besides the gun fitting in the CERN test stand gun solenoid, it should be checked that the beam produced will be transported to the collector without hitting the vacuum chamber, i.e. check that the magnetic system and vacuum chamber dimensions are sufficient to transport the beam. D. Ondreka pointed out that the tests at CERN could be done with a round electron beam (without the quadrupolar field that would be used to make it oval).

2.3 CERN e-lens test stand (S. Sadovich)

The test stand is under installation and commissioning. S. Sadovich presents a picture of the test stand with both gun and collector solenoid installed and connected. A hollow e-gun has already been assembled, as shown in the presentation.

S. Sadovich showed an additional piece to the collector that will allow passing all cables' feedthrough. It is not dimensioned for the SC beam and should be checked together with the rest of the test stand.

SC gun integration into the CERN test stand will be discussed extensively during the WP16 parallel meeting at the Y2 meeting.

Generally, CERN needs more interaction with GSI and IAP to be able to build the test stand compatible with the SC gun electron beam.

3 Preparations for the Y2 meeting

There will be two presentations on WP16 during the Y2 meeting: The WP16 status report (15 min.), presented by D. Ondreka and a highlight talk (20 min.) on the design of the SC gun, presented by K. Schulte-Urlichs. D. Ondreka will reserve more room in his presentations for the topics not presented in the highlight talk, asking the respective participants to provide according input.

There are two time slots for the WP16 parallel meeting at the Y2 meeting: Monday, 8 April, from 3 to 6 p.m. and Tuesday, 9 April, from 8.30 to 12.30. The two main technical topics to be discussed in the parallel meetings will be (i) the integration of the SC gun into the CERN test stand and (ii) the design of the final modulator. D. Ondreka will come up with a proposal for the agenda of the WP parallel meeting soon.

In addition, a plan of activities for the WP in the last two years of the ARIES project needs to be fixed during the meeting. This plan should in particular include dates for the completion of design and manufacturing of gun and modulator, consistent with a sufficiently long period for testing the gun at the CERN test stand. Such a plan is urgently needed to allow a reliable planning of tasks and resources for the other participants.