

Beam Commissioning Working Group Meeting, 31 August 2018

[Indico Link](#)

LINAC4 beam commissioning (see [link](#)), *A. Lombardi*

- A. Lombardi started with the schedule for the HW and beam commissioning for LINAC4 and discussed the important dates of the commissioning until now and of the future. The beam is expected to be optimized at 160MeV the 28th of September.
- Alessandra suggested to have daily debriefing meetings in the LINAC control room. F. Roncarolo commented that BI received the request today and the time and location needs to be agreed. He suggested that it would be useful to add the summary of the plan of the day in the logbook everyday.
- Alessandra went through the future tasks in more detail. Neutralisation and pre-chopper tests will be done in task 1 by scanning the voltage in the pre-chopper. The longitudinal bunch structure will also be optimised in this stage. Task 3 will focus on the optimisation of the beam quality at 160MeV, take all the references on all WS and define a series of daily or weekly measurements for the reliability run. Finally, she presented the Goals to achieve by the end of September.
- Verena asked how much time each task will take. Alessandra replied that each task will take around 2 weeks.
- Verena asked how the optimization procedures will be done and if the optimization of each parameter will be done one after the other, manually, or if there is an automated way. Alessandra replied that the optimization is done by changing some parameters and optimizing one observable. At the beginning this will be done separately for each parameter. Then there is an ABP script/optimizer that will be used. Bettina commented that the initial parameter optimization is very lengthy asking if there is any other way to make this procedure faster.
- Verena asked if the models or theoretical background can be used to find a starting point and then use the optimizers. Alessandra replied that once the final source will be ready this will be the case but for the moment this is not possible. Alessandra added that the priority is the RF phase optimization. She also added that the low energy part is the one that is more difficult to optimize. From 3MeV and after, the setting up should be more straightforward and based on the models.
- Verena asked if the settings that will be found now will be valid until the end of this run. Alessandra replied that if nothing is changed then yes. Bettina added that for this it is also very important that the source is stable.
- Verena asked if the source autopilot is foreseen to be made operational for this run. Alessandra replied that the autopilot in a basic functionality will be revived but not for the full optimisation.

Reference measurement tool (see [link](#)), *A. Rey*

- A. Rey presented the reference measurement tool. The aim is to store as much information as possible and regroup them as header and data information. For example the full set of LSA/Inca settings trim history will not be kept from one year to the other due to storage space limitations. For many measurements it is important to keep screenshots.
- Tags/Keyword: Very important to give tags/keywords to each data set so that they can be easily retrieved. Prepare check-lists with keywords per accelerator to ensure that all the required data will be stored and will be easily accessible.
- The ability to reload reference data is not there yet but it is important to have this in the final version.
- Marine asked how the data between different years will be compared if the settings are different. The speaker replied that this will be done through the screenshots.

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- The implementation is based on an e-logbook like infrastructure. The speaker highlighted that any comments/suggestions for improvement are very welcome. The aim is to have finally a tool that is maintainable for long time. Web page application for browsing also outside the CCC should be provided still.
- A simple java API with basically 1 line of code is ready to be tested in the SPS. The speaker invited other machines to try it as well.
- Feedback from the users is needed in order to make sure that all the useful information is stored.
- The technical solution for the web based solution for browsing and search is still under investigation.
- In conclusion the focus is on having a system which is simple, configurable and supports multiple data formats. Input at this stage is very important in order to have the correct tags and checklists, experience and new ideas.
- Marine referred to the PS presentation by Frank on the reference measurements. Frank asked during his presentation if it is possible through the working sets to save the device acquisitions. Marine asked if this is possible with the new reference tool rather. The speaker replied that it needs to be understood how the data are collected first. For the working sets this is probably not a problem. It will be more complicated for the measurement data acquisition and this has to be thought how it will be done. Vitto commented that it is very important that the information that should be stored in CALS/NXCALS stays there and data is not duplicated. Verena agreed with this, however, the screenshots are very useful and should be stored in this new tool. This information is not available in CALS. Verena also added that the management of tags is also very important. CALS or NXCALS do not provide a service for this.
- Verena informed that in the SPS the reference measurements will be taken after the technical stop, asking if is possible to use the tool already. The speaker replied that this is possible. Verena asked if is possible to push also some of the plots from the analysis (python SWAN notebooks) into this tool. The speaker replied positively and that it should be possible to push information through python.
- Verena asked if it will be possible to browse stored information to at least some extent already. The speaker replied that for the moment this is not possible. They are looking into different solutions. If someone has the expertise and can help he/she is very welcome.
- Verena asked about the possibility of doing a java browsing as a starting point. The speaker replied that he is already working on this. Verena asked how long this will take. The speaker replied that maybe before the end of September the first version will be available.
- Heiko asked what the minimum required infrastructure is to run this. The speaker replied that only Java is needed.
- Giulia explained that in the case of the SPS RF group, the raw data are very large in the format that they store them now. To change the format now it is very difficult. Is it possible to add the file format and the link to the data? The speaker replied that this should be possible.
- Verena commented that it sounds that this tool fulfills the main requirements. It now needs to be tested by as many users as possible to make the next step.
- Frank raised his concern on how the data will be treated: retrieve and compare. The speaker replied that to retrieve and process the data is much heavier to implement. It needs commitment from application developers. Some of them are showing interest already.