

690835-MUSE-H2020-MSCA-RISE-2015

Minutes of the MUSE Scientific Board (SB), Thursday, June, 23rd, 2016 - 3:00 pm (GMT)

Attendees: D. Cauz (Skype, at INFN-TS), R. Chislett (Skype), S. Donati (chair, at INFN-PI), A. Ferrari (Skype, at HZDR), C. Ferrari (Skype, at Fermilab), S. Giovannella (Skype, at INFN-LNF), Barry King (Skype, in Liverpool), M. Lancaster (Skype, at UCL), A. Lusiani (Skype, at INNF-PI), S. Miscetti (Skype, at INFN-LNF), G. Tassielli (Skype, at INFN-LE).

Agenda:

1. Discussion on the advancement status of the 7 Work Packages

1. Discussion on the advancement status of the 7 Work Packages

1. WP1 "g-2 detectors": M. Lancaster (UCL) reported on the activities relative to the g-2 detectors.
 - (a) **Deliverable 1.4: Tracker DAQ Integration.** The DAQ system for the tracker and the calorimeter are already operational at Fermilab. UCL is also developing a new board to receive a timing signal from the calorimeter laser calibration in order to correlate the tracker and calorimeter activity during calibration periods as well as muon spills. The plan is to have cosmic tests of a tracker and calorimeter module to demonstrate the DAQ integration between August 2016 and November 2016. We believe to be well in time for the the deadline for this Deliverable at M17.
 - (b) **Deliverable 1.3: Installation and commissioning of straw trackers.** There has been a successful internal g-2 review of the tracker prototypes and the final batch of straws from the US manufacturer have arrived. This allows to proceed with mass production. The first module is at Fermilab and the remaining seven necessary to build the first tracker station are expected in time for installation in the ring in November 2016. Tests of trackers in vacuum with a source and cosmic with final high-voltage, low-voltage and DAQ are underway at Liverpool and Fermilab. Commissioning of system with beam is expected in summer 2017, well in time for the deadline of the Deliverable at M24.

2. WP2 "Mu2e detectors":

- (a) M. Lancaster (UCL) reported that the outline proposal for funding to design and build the Germanium detector has been approved by the UK Funding Agency (DTFC). Full proposal will be submitted within one month, and funds for construction will be available in April 2017. Plans for irradiation and annealing test of a HPGe detector at Hzdr are in progress.
- (b) S. Miscetti reported on the progress on the Mu2e electromagnetic calorimeter design. The most significant news is that the calorimeter project has received CD-3c approval and construction has been authorized. Future steps include the preparation of the Statement of Work between DOE and INFN, which will list the work that INFN has committed to do. In the next few months the calorimeter project is going to have several reviews, including mechanics, photo-sensors and electronics. The Construction readiness Review is going to be in Spring 2017 or Summer 2017. In the next six months we are going to perform irradiation tests of Large Area UV extended Hamamatsu at HZDR, and to develop a more "industrial" standard for crystal quality assurance, in collaboration with Prisma experts.

3. WP3 "Calibration":

- (a) C. Ferrari (INFN) and D. Cauz (INFN) reported on the development and assembly of the g-2 laser calibration system. A brief description of the hardware system was given and the results of the tests with a 450 MeV electron beam at the INFN Laboratori Nazionali di Frascati were reported. Also the results of the test beam at Slac, performed with a 3 GeV electron beam on a full calorimeter and calibration system, were reported. Procurement of all the components necessary to assemble the full laser calibration system is in progress. The plan is to have the system fully integrated in the g-2 experimental area in early 2017.
- (b) S. Miscetti (INFN) reported on the status of the Mu2e calorimeter calibration system design. Mu2e will have a multiple system. A radioactive source which will illuminate each calorimeter cell with 6 MeV photons to perform a channel by channel equalization on a weekly basis. A laser system, similar to g-2, will allow to take under control the fast gain changes of the SiPMs and to make a fast control of the SiPM charge and time resolution. In-situ calibration tools will be provided by cosmic rays, $\pi^+ \rightarrow e^+ \nu_e$ and decay in orbit events.

4. WP4 "Software tools":

- (a) R. Chislett (UCL) reported on the status of the stress test of g-2 analysis framework with 10^{11} simulate muon samples. The first test with 100 million events has been completed successfully. The test with 100 billion events is going to begin in one month.
- (b) G. Tassielli (INFN) reported on the status of the simulation of the Mu2e electromagnetic calorimeter and of the HPGe detector. The two packages are well established: geometry, details of physics effects, and details of reconstruction, including simulation of the electronics chain, are taken into account.

5. WP5 "Dissemination and Outreach":

- (a) A. Lusiani (INFN) reported on the several UCL and Liverpool activities relative to masterclasses for students. In February 2016 UCL has organised 7 hours masterclass on g-2 for 120 students aged 16-18, in April 2016 UCL and Liverpool organised masterclasses for about 100 students. A. Lusiani also reported the list of seminars on g-2 and visits to the g-2 laboratories planned for the Italian Summer Students at Fermilab.
- (b) A. Ferrari reported on the recent Outreach activities at HZDR, which include a paper in the german-language in-house paper "Insider" and posters presented at the HZDR Open Day in may 2016, and at the "Lange Nacht der Wissenschaften" in June 2016.

6. WP6 "Transfer of Knowledge":

- (a) A. Ferrari (HZDR) reported on the Secondments of Prisma Personnel at INFN. A. Soukoulia developed traceability procedures for the Mu2e electromagnetic calorimeter crystals. P. Kouris worked on the Mu2e calorimeter crystals database and on the plans of the irradiation tests with thermal neutrons. Plans for the Secondments of HZDR researcher to Advansid were also discussed.
- (b) F. Spinella (INFN) reported on the Transfer of Knowledge between INFN and the Prisma researcher currently Seconded at INFN-Pisa, the researcher is working on the development of the Mu2e calorimeter electronics. There have been contacts also with the company Microtest, located in Lucca, in Italy. This company is interested in the Quality Assurance rules we are developing for the Mu2e calorimeter components.

7. WP7 "Management": S. Giovannella (chair of the MB) made a brief summary of the Deliverables and Milestones for the year 2016 and reported on the progress of the Secondments for the year 2016.

The meeting is closed at 4:30 pm