

690835-MUSE-H2020-MSCA-RISE-2015

Minutes of the MUSE Scientific Board (SB), Friday, October 27th, 2017 - 5:00 pm (GMT)

Attendees: D. Cauz (Zoom, at INFN-TS), S. Donati (chair, at INFN-PI), S. Giovannella (Zoom, at INFN-LNF), C. Ferrari (Zoom, at INFN-PI), A. Ferrari (Zoom, at HZDR), M. Lancaster (Zoom, at UCL), B. Chislett (Zoom, at UCL), F. Spinella (Zoom, at INFN-PI), S. Miscetti (Zoom, at INFN-LNF), A. Lusiani (Zoom, at INFN-PI), D. Glenzinski (Zoom, at FNAL).

Agenda:

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

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1. WP1 "g-2 detectors": M. Lancaster (UCL) reported on the activities relative to the g-2 detectors.

(a) **Milestone 1: Tracker DAQ Integration completed on time within June, 2017.**

(b) **Deliverable 1.2: Report on installation and initial commissioning of Muon (g-2) trackers.** Muon (g-2) took data from May-31 to July-7 and DAQ and detectors performed well. The first 8-module tracker recorded approximately 2M tracks. Further tracker modules may be installed in the summer 2018 shutdown.

2. WP2 "Mu2e detectors":

(a) M. Lancaster (UCL) reported on the design of the Mu2e HPGe detector (due in April 2018). Complete specification of the detector is expected by the end of 2017. Data taken at Elbe/HZDR in August will be analysed by UCL students soon.

(b) S. Miscetti (INFN) reported on the status of the Mu2e electromagnetic calorimeter. The geometry implemented in the simulation is becoming more and more realistic. Crates, Aluminum support and front face disks with calibration source tubing have been included. All new implementations are being used to evaluate reconstruction performance and improve our evaluation of the total

integrated dose and fluences. The analysis of the data collected at the Module-0 testbeam is still in progress. The energy resolution at 100 MeV is 6% for 0-degree impact electrons, and it is 7.4% for 50-degree impact electrons. The time resolution is 100 ns for 0-degree electrons and 180 ns for 50-degree electrons. CsI crystals have been ordered from the companies Siccas and St. Gobain and first samples are expected in November. Production will begin in early 2018. The contract between INFN and Hamamatsu for 4000 SiPM has been signed. The mechanical design of the calorimeter disks and the front-end and DAQ electronics is progressing well.

3. WP3 "Calibration":

- (a) **Deliverable 3.2 "Calibration system for the Muon (g-2) straw tracker has been completed in July, 2017).**
- (b) D. Cauz reported on the Muon (g-2) calorimeter calibration system. A SiPM gain drop has been observed in conjunction with pile-up in the crystals and with the power supply recovery time. This effect is now being investigated. Work is in progress to double the local monitor of the calibration system.

4. WP4 "Software tools":

- (a) **Milestone 7: Mu2e HPGe reconstruction code (due May 1, 2019** M. Lancaster (UCL) reported on the software status, MWD algorithms for energy and time are being evaluated.

5. WP5 "Dissemination and Outreach":

- (a) A. Lusiani reported on the "Fermilab 50th birth anniversary open day" (September 23, 2017). About 10,000 US citizens visited Fermilab. About a dozen Muse researchers and two Summer Students were involved. They prepared posters and a slideshow on Muon (g-2) and Mu2e and built a scaled 3D representation of the Muon (g-2) laser calibration system and of the tracker. In October 2017, at the INFN National Laboratories at Frascati, Muse researchers were involved in the "3-day High School teachers training" event. Seminars on Mu2e, crystal calorimeters, SiPM were delivered, along with hands-on training sessions on crystals and SiPM.

6. WP6 "Transfer of Knowledge":

- (a) F. Spinella reported on a possible new collaboration between INFN and Caen for the development of a general-purpose radiation-hard Digitizer. INFN has received the first prototype of the Digitizer of the Mu2e calorimeter and Caen is interested in developing a commercial general-purpose radiation-hard version of the device. Work is in progress to organize a specific collaboration on this project.
7. WP7 "Management": S. Giovannella reported that the Deliverables and Milestones expected in 2017 were all completed, with the last two ones expected for December 2017

The meeting is closed at 6:30 pm