Contribution ID: **218** Type: **Mini Oral and Poster**

Beam Tests of the Data Acquisition of the Mu3e Experiment

Wednesday 14 October 2020 16:09 (1 minute)

The Mu3e experiment at the Paul Scherrer Institute searches for the lepton flavour violating decay $\mu^+ \rightarrow e^+e^+e^-$. The experiment aims for an ultimate sensitivity of one in 10^{16} decays. The first phase of the experiment, currently under construction, will reach a branching ratio sensitivity of $2 \cdot 10^{-15}$ by observing 10^8 muon decays per second over a year of data taking. The highly granular detector based on thin high-voltage monolithic active pixel sensors (HV-MAPS) and scintillating timing detectors will produce about 100 GB/s of data at these rates. The FPGA-based Mu3e Data Acquisition System will read out this data from the detector and identify interesting events using a farm of graphics processing units. The poster presents the ongoing integration of the sub detectors into the Field Programmable Gate Array based readout system which is used to sort and transport the data to the filter farm. Integration test beam campaigns are conducted to verify and integrate the different detector systems.

Minioral

Yes

IEEE Member

No

Are you a student?

Yes

Author: KÖPPEL, Marius

Co-authors: Mr AUGUSTIN, Heiko; Mr BERGER, Niklaus; Mr BRIGGL, Konrad; Mr DITTMEIER, Sebastian; Mr GAYTHER, Ben; Mr GERRITZEN, Lukas; Mr GOTTSCHALK, Dirk; Mr KOZLINKIY, Alexander; Mr MÜLLER, Martin; Mr MUNVES, Yonathan; Mr RITT, Stefan; Mr ANDRÉ, Schöning; Mr VIGANI, Luigi; Mr HESKETH, Gavin; Mr WAUTERS, Frederik; Mr ZHONG, Tiancheng; Mr KILANI, Samer; ON BEHALF OF THE MU3E COLLABORATION

Presenter: KÖPPEL, Marius

Session Classification: Poster session C-01

Track Classification: Data Acquisition System Architectures