COMPASS DAQFEET 2019

Monday, 11 February 2019 - Wednesday, 13 February 2019

Other Institutes

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Possible COMPASS software improvements during LS2

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LS2 presents a fitting time to revisit and rework existing software concepts and architectures used at COMPASS. Going beyond the DAQ software itself, this talk will explore pitfalls in current COMPASS software architectures, databases, and user interfaces. A number of potential projects to alleviate these pitfalls will be presented. The aim of this talk is to start a long-term discussion to assess the feasibility and priority of the given projects.

COMPASS support software tools

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Recently, new software support tools (such as the electronic checklist and the shift manager) have been introduced to the COMPASS experiment. They should help shifters and other members with their responsibilities. This contribution will briefly introduce these tools and sumarize their benefits. Moreover, it will present several brand new support tools that are currently under development and will be deployed during the long shutdown.

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Spin Physics Detector at the NICA collider in Dubna

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Spin Physics Detector (SPD) is to be built at collider NICA, which construction is well underway in the Joint Institute for Nuclear Research, Dubna, Moscow region. A wide program of experiments with polarized protons and deuterons will be realized with SPD. SPD is a $4\pi$ detector with magnetic system and a set of detectors providing coordinate, time and energy measurements in conditions of high luminosity. The data acquisition system of SPD is planned to be close to the modernized COMPASS DAQ. The SPD collaboration is in the state of formation and new participants are welcome.
Opening remarks

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COMPASS and COMPASS++ Physics Program after LS2
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COMPASS iFDAQ Performance
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CEDAR Performance during 2018 Run
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Trigger Less DAQ : Architecture and Challenges
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Unified Communication Framework
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**iFTDC Architecture and Status**

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**iFDAQ XCKU Card**

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**Invited Talks / 13**

**SRS VMM: A next generation generic readout system**

**Author:** Michael Lupberger

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The Scalable Readout System (SRS) of the RD51 collaboration with the APV25 ASIC is driving R&D for gaseous detectors. Discontinuation of APV25 and demands on flexibility concerning e.g. detector capacitance and readout rate induced a replacement of the ASIC, for which the collaboration has chosen the VMM chip of the ATLAS New Small Wheel upgrade. Several prototype SRS VMM systems are operational with small GEM detectors and were used at test beams. Hardware components are now finalised in the transition phase from development to larger quantities production. More than twelve groups signed as primary system users. The SRS as well as the VMM ASIC will be introduced, followed by an overview of the specific implementation of the ASIC into the system and its current status. Finally, applications and further developments will be outlined.

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**A hydrogen-filled TPC as an active target for a proton-radius measurement**

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**Status of NUSTAR R3B detector readout**

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**Proton Radius in High-Energy Muon Scattering**
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MuPix8 Pixel Detector

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SciFi Trecking Detector

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Low Noise High Integration Electronics for TPC

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iFTDC

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Trigger Processor I

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On-line Pulse Parameterization based on Waveforms

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Data Compression Techniques

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Efficient FIR Filter Implementation in FPGAs

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Xilinx Zinq FPGA Experience and Performance

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Spin Physics Detector at the NICA collider in Dubna

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ToAST ASIC development

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Monolithic Active Pixel Sensors on high resistivity substrates: status and perspective

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ATLAS DAQ from Run 2 to HL-LHC

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Freiburg University Contribution

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Round Table, Discussion, Plans

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Plans for DAQ software beyond LS2

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Conclusion remarks and discussion

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