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The Data Acquisition System for the COMPASS++/AMBER Experiment

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The Data Acquisition System for the COMPASS++/AMBER Experiment (25' + 5')

Abstract:

COMPASS++/AMBER experiment is a multipurpose spectrometer at the CERN SPS. It will perform variety of measurements with different beams and targets addressing fundamental questions of Quantum Chromodynamics. The development of the data acquisition is challenged by diverse requirements of wide physics programs, difference in detectors compositions, and high precision measurements i.e. high statistics and high data rate. In order to be flexible and be able to cope with high data rate, the new DAQ employs trigger less free running front-end electronics. Depending on the physics program the amount of data streamed by the detectors may exceed 30 GB/s during the spill. A data reduction is performed by an integrated digital trigger processor, which defines a time of interest. The data within the time of interest are extracted, merged in one event, and transmitted to the Central Data Recording facility. The bandwidth of the CDR is limited to 2 GB/s. The architecture of the DAQ and the state of the development will be presented.

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