

The Data Quality Monitoring Software for the CMS experiment at the LHC: past, present and future

Thursday 12 July 2018 12:00 (15 minutes)

The Data Quality Monitoring Software is a central tool in the CMS experiment. It is used in the following key environments: 1) Online, for real-time detector monitoring; 2) Offline, for the prompt-offline-feedback and final fine-grained data quality analysis and certification; 3) Validation of all the reconstruction software production releases; 4) Validation in Monte Carlo productions. Though the basic structure of the Run1 DQM system remains the same for Run2, between the Run1 and Run2 period, the DQM system made substantial upgrades in many areas, not only to adapt to the surrounding infrastructure changes, but also to provide improvements to meet the growing needs of the collaboration with an emphasis on more sophisticated methods for evaluating data quality. We need to cope with the higher energy and luminosity proton-proton collision data, as well as the data from various special runs, such as Heavy Ion runs. In this contribution, we will describe the current DQM Software, Structure & Workflow in the different environments. We, then, discuss the performance and our experiences with the DQM system in Run2. The main technical challenges which we have encountered and the adopted solutions during Run2 will be also discussed, including efficient use of memory in multithreading environment. Finally, we present the prospect of future DQM upgrade with emphasis on functionality and long-term robustness for LHC Run3.

Primary authors: NORKUS, Antanas (Vilnius University (LT)); VAN BESIEN, Broen (Massachusetts Inst. of Technology (US)); BUGELSKIS, Dmitrijus (Vilnius University (LT)); PATRICK, James Fraser (Fermi National Accelerator Lab. (US)); FERNANDEZ MENENDEZ, Javier (Universidad de Oviedo (ES)); MAESHIMA, Kaori (Fermi National Accelerator Lab. (US)); SCHNEIDER, Marcel Andre (CERN); ROVERE, Marco (CERN); HREUS, Tomas (Universitaet Zuerich (CH)); AZZOLINI, Virginia (Massachusetts Inst. of Technology (US))

Presenter: SCHNEIDER, Marcel Andre (CERN)

Session Classification: T2 - Offline computing

Track Classification: Track 2 –Offline computing