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## Data Monitoring of the ATLAS Muon System and Commissioning of the New Small Wheel DQ System

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The instantaneous luminosity of the Large Hadron Collider (LHC) at CERN will be increased up to a factor of seven with respect to the original design value to explore higher energy scale. In order to benefit from the expected high luminosity performance, the ATLAS Muon System was upgraded with its first station end-cap Small Wheel system replaced by a New Small Wheel (NSW) detector. The Muons System and the NSW provide precise track segment information to the ATLAS Level-1 trigger for data recording. Before being certified for permanent storage, the data must be scrutinized to ensure the integrity of the detector. Prompt identification of any issues calls for near-line fast action to investigate, correct and potentially prevent problems that could render the data unusable for physics analyses. This is achieved through the monitoring of detector-level quantities and reconstructed collision event characteristics at key stages of the data processing chain. This presentation will present the monitoring and assessment procedures in place at ATLAS for data-taking in 2022 for Run3 with the Muons System. In the last two years the ATLAS experiment has indeed commissioned an upgraded its full data-flow quality monitoring system for online hardware detector status survey and quick assessment of the running conditions. The main technology development and status of the Run3 Muon System commissioning system with GNAM, as the online monitoring structure developed to oversee the data-taking of the ATLAS detectors, will be summarized with preliminary results for early detector operation. The deployment of new NSW Data-Quality (DQ) software and the practical operations arrangements, as well as key technical implementation aspects, will be outlined. This DQ monitoring tool allows great flexibility for visualization of histograms, with an overlay of reference histograms when applicable and configuration for automatic checking of the status of the detectors as data is being recorded. The online DQ also use data provided at the express-stream which are reconstructed with the Athena platform. This contribution will therefore summarize the progress in the ATLAS Muon System commissioning, present the data quality monitoring and certification systems in place from online data taking to delivering certified data sets for release validation and offline reconstruction for future physics analyses.

### In-person participation

Yes

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