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Results from muon reconstruction performance with the ATLAS experiment at the LHC using Run-3 proton-proton collision data

Muon reconstruction performance plays a crucial role in the precision and sensitivity of the Large Hadron Collider (LHC) data analysis of the ATLAS experiment. Accurately measuring the muon performance of the ATLAS detector is of paramount importance to provide fundamental input to physics analyses involving muons. Furthermore, the ATLAS Muon Spectrometer was significantly upgraded for LHC Run-3, most notably with the New Small Wheel upgrade project, including new muon detectors with innovative design; measuring the performance of this upgrade on real data is therefore extremely important. Using di-muon resonances we are able to characterize and calibrate with high accuracy the detector response for muons in terms of muon identification and isolation efficiency and muon momentum measurement. An overview of the state-of-the-art methods for muon performance measurement and on the results obtained on Run-3 proton-proton collision data at a center-of.mass energy of 13.6 TeV is presented here.

Secondary track

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