

Performance of the ATLAS RPC detector and L1 Muon Barrel trigger at $\sqrt{s} = 13\sqrt{\text{TeV}}$

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We will discuss the performance of the Resistive Plate Chambers detector (RPC) and the Level-1 Muon Barrel trigger of the ATLAS experiment during the LHC data taking at 13 TeV. The Level-1 Muon Barrel trigger operates at the 40 MHz LHC collision rate and uses the RPC to select muon candidates in the barrel region. The RPC detector consists of 3600 gas volumes arranged in three concentric double layers, operating in approximately 0.5 Tesla toroidal magnetic field. Performance results would include measurements of RPC detector response and efficiency using muons produced in pp collisions. Measurements of the trigger timing and efficiency, total time resolution and readout system would be also presented. In order to extrapolate detector response to High Luminosity LHC regime, the detector efficiency was also measured at different high voltage and front-end electronics threshold settings, and gas volumes currents were measured as a function of instantaneous luminosity and high voltage.

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