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Performance and Operation of the ATLAS RPC Detector during the 2011 LHC run

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Resistive Plate Chambers (RPC) provide the barrel region of the ATLAS detector with an independent muon trigger and a two-coordinate measurement.

The chambers, arranged in three concentric double layers are operated in a strong magnetic toroidal field and cover a surface area of about 4000 m².

During 2011 the LHC has provided proton-proton collisions at 7 TeV in the center-of-mass frame with a steady increase in instantaneous luminosity over several orders of magnitude, summing up to 5fb⁻¹.

The operational experience for this running period is presented along with studies on the detector performance as a function of luminosity, environmental conditions and working point settings.

The measurements presented allow defining a strategy for the data taking in next years and make predictions on the performance when higher luminosities will be reached.

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