Contribution ID: **252** Type: **Parallel session talk**

Performance of ATLAS RPC detectors and L1 Muon Barrel Trigger with a new CO2-based gas mixture

Saturday 20 July 2024 18:00 (15 minutes)

Resistive Plate Chambers are used in the ATLAS experiment for triggering muons in the barrel region. These detectors use a Freon-based gas mixture containing C2H2F4 and SF6, high global warming potential greenhouse gases. To reduce the greenhouse gas emissions and cost, it is crucial to search for new environmentally friendly gas mixtures. In August 2023, at the end of the proton-proton data-taking campaign, ATLAS collaboration decided to replace the standard gas mixture (94.7% C2H2F4, 5.0% i-C4H10, 0.3% SF6) with a new CO2-based gas mixture: 64% C2H2F4, 30% CO2, 5.0% i-C4H10, 1% SF6. The performance of the RPC detectors with the new gas mixture will be presented with a particular emphasis on detector efficiency, cluster size and timing performance, as well as the efficiency of the L1 Muon Barrel trigger system.

Alternate track

I read the instructions above

Yes

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Session Classification: Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

Track Classification: 12. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors