Contribution ID: **258** Type: **Poster**

The ATLAS Forward Proton Time-of-Flight Detector System

Thursday 18 July 2024 20:40 (20 minutes)

The Time-of-Flight (ToF) detectors in the ATLAS Forward Proton (AFP) system are used to measure the primary vertex z-position of the pp -> pXp processes using the arrival times of the two intact final state protons. Detection efficiencies and timing resolutions using low, and moderate pile-up data collected are presented. While efficiencies of a few percent are observed in the Run 2, the resolutions of the two ToF detectors of 21 ps and 28 ps are measured. This corresponds to the expected precision of 5.3 ± 0.6 mm for the vertex reconstruction. The subsequent analysis confirms that the vertex position obtained with the ToF aligns with the value from the ATLAS central detector at the level of 6.0 ± 2.0 mm. During long shutdown 2, the ToF detector underwent major upgrades in electronics, optics, and mechanics, expected to provide a substantial improvement in detection efficiency. Preliminary results for efficiency and resolution studies based on Run 3 data taken will be presented.

Alternate track

I read the instructions above

Yes

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Session Classification: Poster Session 1

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