



Contribution ID: 8

Type: Talk (invited speaker only)

[A01] Operational Experience and Performance with the ATLAS Inner Detector at the Large Hadron Collider at CERN

Monday 5 October 2020 20:15 (30 minutes)

The Inner Detector in the ATLAS experiment consisting of Pixel, SCT and TRT has been operated successfully with high performance in LHC Run 1 (2010 - 2012) and Run 2 (2015 - 2018). The LHC instantaneous luminosity of pp collisions has been increased during the operation and reached a maximal value of $2.2 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ in 2017, more than twice of LHC design value ($1.0 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$). Even with such high luminosity, the Inner Detector took physics data with high efficiency, improving the data-taking system and optimizing the operation settings. The Inner Detector was exposed to a radiation dose higher than what has ever been experienced in any other detectors in high energy physics experiments. Effects of radiation damage on silicon sensors and front-end ASICs were intensively studied. In this talk, the operational experience of the Inner Detector in the ATLAS experiment as well as its performance after high radiation dose will be presented.

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Session Classification: Current Detectors I