Contribution ID: **746** Type: **Poster**

AugerPrime Upgraded Unified Board: The New Front-End Electronics

Wednesday 21 July 2021 13:18 (12 minutes)

Since 2015 the Pierre Auger Observatory has been undergoing an important upgrade. It consists of the addition of Scintillator Surface Detectors (SSD) on top of the existing Water-Cherenkov Detectors (WCDs), as well as Underground Muon Detectors (UMD), a small Photo-Multiplier Tube (sPMT) inside the WCDs and a Radio Detector antenna array, at each of the 1660 surface detector stations. To process the signals of all these detector systems and to increase the dynamic range and time resolution, new electronics, Upgraded Unified Boards (UUBs) have been developed and are being fabricated and deployed at the Observatory.

The combination of all of these new features of the Surface Detector (SD) will provide an enhanced capacity for answering the still many open questions related to the nature of ultra-high energy cosmic rays.

In this work the main characteristics, the production chain, the performances and the status of the implementation of
the new Upgraded Unified Boards will be illustrated. The first data collected from the already
operational upgraded stations in the array will also be presented.

Keywords

Electronics; Detector; UHE Cosmic Rays

Collaboration

Auger

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect