

AugerPrime Upgraded Electronics

Executive Summary

G. Marsella^{a,b} for the Pierre Auger Collaboration^c



^a Università degli Studi di Palermo, Dipartimento di Fisica e Chimica "E. Segrè"
Via delle Scienze ed. 17, 90128 Palermo, Italy

^b INFN Sezione Catania, Via S. Sofia, 64, 95125 Catania, Italy

^c Observatorio Pierre Auger, Av. San Martín Norte 304, 5613 Malargüe, Argentina

What is this contribution about?

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

Why is it relevant/interesting?

The test procedures are described as well as the status of implementation of UUBs in the field. The AugerPrime commissioning shows the performance of the new electronics and of the new implemented detectors.

What has been done?

The functionality of the production and validation chain has been monitored at the manufacturer. The Environmental Stress Screening test system in Prague has been implemented and is fully operational. Presently, 81 boards are installed in the field, 79 in a pre-production engineering array, and 2 in the AugerPrime stations where all the AugerPrime detectors are already installed and are used to test the AugerPrime integration. Since the end of 2020, data from all installed boards are acquired with the standard array. In this way, the new AugerPrime devices, such as SSD and sPMT, that can be acquired only by the new electronics, are continuously monitored by the collaboration.

What is the result?

Already 81 boards are in Argentina, and at the end of July 2021, 84 more will be sent, and 400 more are planned at the end of August 2021. The performances of the boards are stable and well within the design requirements. The process is going on as expected, and we foresee the completion of the UUB deployment by the end of 2022.