

AugerPrime status and prospects

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The Pierre Auger Collaboration started a few years ago the AugerPrime project to increase the Surface Detector (SD) performance of the Pierre Auger Observatory. It aims to address the still open questions on the origin and composition of the highest energy cosmic rays by allowing better identification of the nature of the primaries. The key element of this major upgrade is the capability of measuring the different components of extensive air showers, which will be significantly improved by the addition of a Surface Scintillator Detector (SSD) on each water Cherenkov detector (WCD) constituting the SD. Moreover, the dynamic range of measurement is extended through an additional small photomultiplier tube inside the WCD. New electronics is processing the signals from the WCD and the SSD with higher sampling frequency and enhanced resolution. The scintillator module deployment started in 2019, and the new electronics in December 2020. The collected data allow for the evaluation of the first performances of the upgraded array and to adapt the whole data acquisition chain necessary for an efficient and sustainable operation of the Observatory.

After the recall of the motivations for the upgrade, the main characteristics of the new detection setup are reviewed, as well as the status of its deployment and commissioning. The expected prospects are also discussed.

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