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AugerPrime - Current status and physics prospects for the next decade of ultra-high-energy cosmic ray studies

Saturday 20 July 2024 12:12 (18 minutes)

AugerPrime, the major upgrade of the Pierre Auger Observatory, has as its main objective to provide an enhanced estimation of the mass composition of the highest energy cosmic rays on an event-by-event basis. It consists of the addition of a surface scintillator detector (SSD) and a radio antenna on top of the existing water-Cherenkov detectors (WCD) of the surface detector array (SD). An additional small PMT installed inside the WCD increases the dynamic range of the SD. The new electronics board allows the connection of all the new detectors, including a higher sampling rate, increased dynamic range, and improved local data processing. An underground array of scintillator detectors will allow for direct measurement of the muon content at $10^{17} - 10^{19}$ eV, in partial overlap with the nominal energy at the LHC. In this contribution, we describe the AugerPrime upgrade and the expected physics performance for the next decade of planned operations.

Alternate track

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Yes

Primary authors: SANTOS, Eva; SCHIMASSEK, Martin

Presenter: SCHIMASSEK, Martin

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