



Contribution ID: 188

Type: INVITED

## AugerPrime: the Pierre Auger Observatory upgrade.

*Friday, October 12, 2018 9:20 AM (20 minutes)*

The world largest exposure to ultra high energy cosmic rays accumulated by the Pierre Auger Observatory lead to major advances in our understanding of their properties, but the many unknowns about the nature and distribution of the sources, the primary composition and the underlying hadronic interactions prevent the emergence of a uniquely consistent picture.

The new perspectives opened by the current results call for an upgrade of the Observatory, which main aim is the collection of new information about the primary mass of the highest energy cosmic rays on a shower-by-shower basis.

The evaluation of the fraction of light primaries in the region of suppression of the flux will open the window to charged particle astronomy, allowing for composition-selected anisotropy searches. In addition, the properties of multiparticle production will be studied at energies not covered by man-made accelerators and new or unexpected changes of hadronic interactions will be searched for.

We present the AugerPrime upgrade, describing the new plastic scintillator detectors on top of the water-Cherenkov detectors of the surface array (SD), the new SD electronics and the extension of the dynamic range with an additional PMT installed in the water-Cherenkov detectors. We discuss the expected performances and the improved physics sensitivity of the upgraded detectors and present the first data collected with the already running Engineering Array.

**Primary authors:** CASTELLINA, Antonella (INFN & INAF-OATo); FOR THE PIERRE AUGER COLLABORATION

**Presenter:** CASTELLINA, Antonella (INFN & INAF-OATo)

**Session Classification:** Sessions