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AMIGA: A muon detector and infilled array for the Auger Observatory

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Abstract content

It is planned to up-grade the Pierre Auger Observatory through some enhancements so that the energy spectrum of cosmic rays can be studied down to 0.1 EeV and the muon component of showers can be determined. The former will lead to a spectrum measured by one technique from 0.1 EeV to beyond 100 EeV while the latter will aid identification of the primary particles. These enhancements consist of three high elevation telescopes (HEAT, described in a companion poster) and an infilled area having both surface detectors and underground muon counters (AMIGA).

The surface array of the Auger Observatory will be enhanced over a 23.5 km2 area by 85 detector pairs laid out as a graded array of water-Cherenkov detectors and 30 m2 buried muon scintillator counters. The spacings in the array will be 433 and 750 m . The muon detectors will comprise highly segmented scintillators with optical fibres ending on multi-anode phototubes. The AMIGA complex will be centred 6.0 km away from the fluorescence detector installation at Coihueco and will be overlooked by the HEAT telescopes.

We describe the design features and expected performance of the AMIGA enhancement.

If this papers is presented for a collaboration, please specify the collaboration

The Pierre Auger Collaboration

Summary

Reference

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