

Expected performance of the ALTO particle detector array designed for 200 GeV - 50 TeV gamma-ray astronomy.

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ALTO/COMET is an R&D project aiming to design a very-high-energy (VHE) gamma-ray observatory sensitive to energies above ~200 GeV. The science goals include continuous observation of soft-spectrum VHE gamma-ray sources such as Active Galactic Nuclei and transients such as Gamma-Ray Bursts. With these objectives, ALTO/COMET is designed to have a low energy threshold with a wide field-of-view of about 2 sr, at a high altitude, and combines particle detectors with air-Cherenkov detectors. In this contribution, we focus on the ALTO particle detector array performance only. Water Cherenkov detectors are used for the detection of secondary particles in atmospheric air showers while scintillators serve as muon counters. A detailed study is presented through air-shower, detector and trigger simulations, followed by the reconstruction of the event parameters and the extraction of the signal (gamma-rays) from the background (cosmic-rays). In addition, the experience obtained from the prototype operation will be presented.

Keywords

very-high-energy gamma-rays; soft-spectrum; signal over background discrimination;

Collaboration

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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