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Exploring the gamma ray sky above 30 TeV with LHAASO

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The gamma ray sky at energies above a few tens of TeV is almost completely unexplored. Sources of photons above ~ 30 TeV must however exist because cosmic rays are accelerated in the Milky Way at least up to the knee energy. Photon emission in this energy range, with a high degree of confidence, has a hadronic origin and traces the proton and nuclei acceleration sites. Gamma ray astronomy above 30 TeV is therefore of fundamental importance for the identification of cosmic ray sources.

LHAASO is a project of a multi-component air shower detector, to be built in Sichuan, China, at 4410 m of altitude. One element of the detector, the KM2 array, a grid of scintillators and muon detectors distributed over an area of ~ 1 Km² will be able to monitor in one year the northern sky at 100 TeV with a sensitivity of 1% of the Crab Nebula flux.

In this paper the capabilities of LHAASO in gamma ray astronomy above 30 TeV are reviewed, and the scientific potential in identifying or constraining galactic and extragalactic cosmic ray sources is discussed.

Collaboration

LHAASO

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