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LACT: Status and Future Plans

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In 2024, the Large High Altitude Air Shower Observatory (LHAASO) released its first catalog of ultra-high-energy (UHE) gamma-ray sources, identifying over 40 such sources. This marked a significant advancement in UHE gamma-ray astronomy. Many of these sources exhibit extended features, necessitating next-generation Imaging Atmospheric Cherenkov Telescopes (IACTs) with higher angular resolution and sufficient sensitivity for detailed morphology studies. To address this need, we propose the Large Array of Imaging Atmospheric Cherenkov Telescopes (LACT), comprising 32 telescopes capable of achieving an angular resolution better than 0.05° for energies higher than 10 TeV. For gamma rays around 100 TeV, a 500-hour exposure on a single source will yield sensitivity comparable to one year of observations with LHAASO. These telescopes will be set up into the LHAASO detector array, taking advantage of LHAASO unique muon detector system to improve gamma-proton discrimination at ultra-high energies. This enhancement will significantly increase the detection sensitivity for gamma rays above 10 TeV, providing a substantial advantage over other IACT experiments worldwide. This presentation will give an overview of the performance and properties of LACT, the progress of the LACT project, and future construction plans.

Author: ZHANG, Shoushan (Institute of High Energy Physics, CAS)

Presenter: ZHANG, Shoushan (Institute of High Energy Physics, CAS)

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