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Angle reconstruction for Cosmic Rays at CONDOR Observatory

The COmpact Network of Detectors with Orbital Range (CONDOR) Observatory is a future cosmic ray observatory to be constructed at an altitude of 5300 m a.s.l. in the Atacama Desert, making it the highest detector array in the world. CONDOR observatory aims to detect cosmic rays with energies starting at ~ 100 GeV scale, a range crucial for bridging the gap between satellite and ground-based experiments. Currently, this low-energy range is only explored through balloon-based measurements, highlighting CONDOR's unique and much-needed contribution. By focusing on this under-explored region, CONDOR aims to study astrophysical phenomena such as gamma-ray bursts, active galactic nuclei, and other transient and steady gamma-ray sources. This work presents results on cosmic ray angle reconstruction for the CONDOR observatory. Using detailed simulations with CORSIKA, we demonstrate the capability to accurately determine incoming particle angles, laying the foundation for future observations. These results highlight the observatory's potential to advance astroparticle physics by leveraging its unique high-altitude location and focus on an energy range that remains poorly understood.

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