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The CONDOR Observatory project

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The COmpact Network of Detectors with Orbital Range (CONDOR) Observatory is dedicated to advancing the study of cosmic rays, with a particular focus on the low-energy regime (˜150 GeV). Located in the Atacama Desert, Chile, at 5300 meters above sea level, the observatory benefits from optimal conditions for detecting and analyzing cosmic ray events. In this initial study, we present a detailed analysis of angular reconstruction and primary particle differentiation based on simulated cosmic ray showers. Using data generated with the CORSIKA simulation software, we develop methods for accurately reconstructing the incident angles of cosmic ray showers and distinguishing between gamma-ray and proton-induced events. These results provide critical insights into the composition and directional properties of cosmic rays at lower energies, demonstrating the observatory's capability to address fundamental questions in astroparticle physics. This work lays the groundwork for future observational efforts and experimental validation at the CONDOR site.

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