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Advanced stereoscopy applied to CTAO

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The Cherenkov Telescope Array Observatory (CTAO) is an international observatory currently under construction, which will consist of two sites (one in the Northern Hemisphere and one in the Southern Hemisphere). It will eventually be the largest and most sensitive ground-based gamma-ray observatory. In the meantime, a small subarray composed of four Large-Sized Telescopes (LSTs) at the Northern site will begin collecting data in the coming year. In preparation, we present a stereoscopic event reconstruction using graph neural networks (GNNs) to combine information from several telescopes of this subarray. In our previous work, we explored the use of GNNs for the stereoscopic reconstruction of gamma-ray events on simulated data from the Prod5 sample and showed that GNNs provide a better stereoscopic reconstruction. We now compare this approach to the currently foreseen method that analytically combines the output of monoscopic random forests, and explore how GNNs can be used in fusion with the Random forest algorithm in order to provide a more sensitive stereoscopic system.

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Classification de Session: Graph and Geometric Deep Learning for Event and Particle Analysis

Classification de thématique: Analysis : event classification, statistical analysis and inference, anomaly detection