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IACT image reconstruction using a spatio-temporal likelihood for LST

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Imaging Atmospheric Cherenkov Telescopes (IACTs) collect the Cherenkov light emitted in Extensive Air Showers (EASs) from highly energetic particles in the atmosphere. One of the main challenges of IACT based astronomy is to discriminate between images from very high energy photons and other particles, mainly protons, and to identify the energy and direction of the primary photons. Here, an innovative method using the maximization of a likelihood function describing the spatial and temporal distributions of the signal in the camera is presented. It allows propagating the calibration parameters in the extraction of the image parameters. These parameters are used to estimate the gammaness of the event, the energy, and the arrival direction of the photon.

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