MEV-GEV POLARIMETRY WITH THE FERMI-LAT

A. Laviron[1], D. Bernard[1] and P. Bruel[1]

Abstract.

A measurement of MeV-GeV linear polarization would provide information about the emission mechanisms of gamma-ray sources, especially pulsars and AGN (Active Galaxy Nuclei). The Fermi Large Area Telescope (Fermi-LAT) detects gamma rays between ∼30 MeV and ∼300 GeV, using their conversion into an electron-positron pair, with the linear polarization affecting the azimutal direction of the pair. Measuring this azimutal direction is extremely challenging due to the multiple scattering of the electron-positron pair in the detector. In this talk, we present the current effort to extract the polarization information from the Fermi-LAT data, including recent developments on the simulation implementation and the event reconstruction and selection. This allows us to estimate the expected sensitivity to linear polarization of the Fermi-LAT, and we apply this to the Vela pulsar.

Keywords: Pulsar, Polarization, gamma-ray astronomy

[1] LLR, Institut Polytechnique de Paris, CNRS/IN2P3, France