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Early Pulsar Observations and GLAST LAT Performance

Abstract content

Vela is the brightest pulsar known in the GeV gamma ray range, yielding a clear signal in less than a day of observations with the Large Area Telescope (LAT). The striking pulsed signature provides a rich opportunity to compare the real gamma ray response of the GLAST LAT to expectations from the highly-detailed Monte Carlo detector simulations. This is critical because all flux and spectral measurements with the LAT rely on the acceptances parametrized by the Instrument Response Functions (IRF), extracted from the simulations. We use the off-pulse signal to estimate the background level in the data, and hence deduce the number of gamma rays in the peaks. We then successively apply the analysis cuts used to identify gamma rays and to reject background, comparing at each step the observed and predicted yields. This procedure is repeated for gamma rays incident on different parts of the LAT and at different angles. Incidence angles will vary widely during normal observations in sky survey mode, and a 2-week pointed mode observation during the Launch & Early Operations phase (L&EO) favors yet a different part of phase space. This method is expected to yield Monte Carlo validations complementary to those already obtained at CERN and at other particle accelerators. Finally, ground tests of the GLAST LAT absolute time stamps will be discussed in the context of Vela observations.

If this papers is presented for a collaboration, please specify the collaboration

GLAST LAT collaboration

Summary

Reference

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