

Observations of the Crab Nebula with the Whipple 10m Telescope

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Due to the strong and steady TeV gamma-ray emission from the Crab Nebula supernova remnant, its measured flux and energy spectrum can be used to verify the calibration and data reduction methods applied to IACT data acquired over many observing seasons. This gives us confidence in the results obtained on variable TeV sources observed over the same period and in relating the sensitivity of new instruments to historical datasets. Here we present the results of an analysis of 65.3 hours of good quality data taken on the Crab Nebula between October 2000 and March 2006 with the Whipple 10m telescope. The total exposure resulted in a 46 sigma signal with 11886 selected excess events. The energy spectrum was best fit by a power law of the form $dN/dE = (3.19 \pm 0.07_{\text{stat}}) \times 10^{-11} (E/\text{TeV})^{-(2.64 \pm 0.03_{\text{stat}})} \text{ cm}^{-2}/\text{s}/\text{TeV}$ in the energy range 0.49--8 TeV. The systematic uncertainty in the flux was estimated to be 30%, with a systematic error of 0.2 in the photon index. A reasonable agreement is shown for a fit to a constant flux over the 6 years.