

Calibration

Introduction

GLAST/LAT and the IACTs will be unprecedentedly close in energy coverage, thanks to the increased efficiency at high energies of the LAT compared to EGRET, and the lower thresholds of recent IACTs. This makes the concept of a cross-calibration between the two techniques possible. How, when and by how much can the absolute energy scale/flux scale be improved for IACTS?

- Currently ACT systematic calibration uncertainties (energy and sensitivity) are $\sim 30\%$
- The ACT energy resolution can be as good as 5% but the absolute energy scale is dominated by uncertainties on Monte Carlo simulations and atmospheric models.
- Using LAT observations at high energies to reduce those systematic errors of ground-based observatories has been mentioned elsewhere (refs).
- A good source would be bright, with a known spectrum that could possibly contain a spectral feature.
- Given such a source, it would probably not be visible by all ACTs..

Documentation

LAT/VHE cross calibration

- [Using the photons from the Crab Nebula seen by GLAST to calibrate MAGIC and the Imaging Air Cherenkov Telescopes](#), Bastieri et al, Astropart. Phys. 23 (2005) 572-576
- The GLAST Lunch [presentation for April 21](#) was on the Bastieri et al. paper and on cross calibration issues in general. One possibility raised, but not explored particularly deeply, was using diffuse emission from the Milky Way for cross calibration. As a cross calibration source, it would have some real advantages, but only if the ACTs can detect extended emission. The HESS collaboration paper on their survey of the inner Galaxy, [astro-ph/0510397](#), says that the Ring Analysis method employed for source detection discriminates against sources with a radius greater than 0.6 deg; an analysis specifically of diffuse emission in this survey is said to be in the works.

Other space based cross calibrations

- [CHANDRA/XMM](#)
- [RXTE Cross Calibration](#)
- [BeppoSAX](#)
- [EGRET/Comptel?](#)