

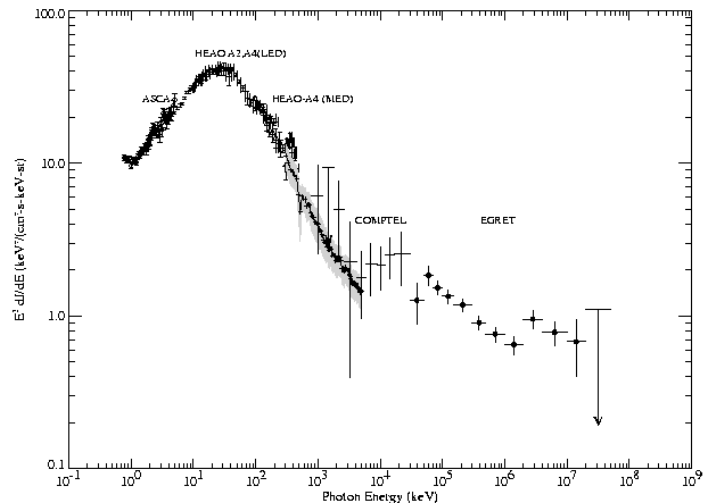
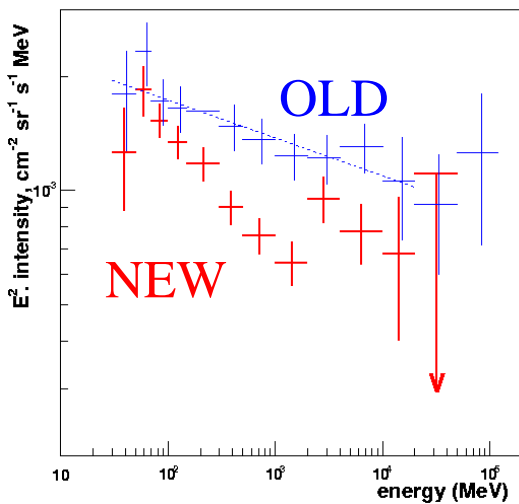
A re-evaluation of the extragalactic gamma-ray background has been made using a new model of the Galactic emission. The background spectrum deviates from the power-law of earlier analyses, and shows a positive curvature as expected for an origin in a population of blazars.

The determination of the extragalactic gamma-ray background (EGRB) depends critically on the correct accounting for the Galactic emission. A new model (see separate poster) provides a more satisfactory prediction of the EGRET data than ever before, all over the sky and over the full EGRET energy range. This has been used as the basis for a re-evaluation of the EGRB.

The technique is to fit the model to the data at latitudes $|b| > 10^\circ$, with the intercept yielding the EGRB. This means that errors in the absolute Galactic intensity are eliminated, and only the modelled angular distribution is used.

An important difference from previous analyses is the large contribution from inverse-Compton emission at high latitudes. This has the effect of reducing the EGRB by a factor of up to 2. While previous work gave a power-law spectrum, we find a positive curvature.

The origin of the EGRB is generally believed to be the sum of undetected blazars, based on extrapolating the log N-log S from EGRET-detected blazars. Such a sum of sources with a range of indices naturally produces the positive curvature which we observe.



Extragalactic Gamma-Ray Background from EGRET data:
OLD is 'standard' background (Sreekumar et al. 1998)
NEW is this work.

Broad-band extragalactic background including new EGRET result.

References:

- Strong, A.W., Moskalenko, I.V., Reimer, O. (2004) ApJ 613, 956
- Sreekumar, P., et al. (1998) ApJ, 494, 523