

The cosmic diffuse gamma-ray background measured with COMPTEL

G. Weidenspointner, M. Varendorff, R. Diehl, G.G. Lichti, V. Schönfelder (MPE), S.C. Kappadath (LSU), J. Ryan (UNH), H. Bloemen, W. Hermsen (SRON), K. Bennett (ESTEC)

We report an independent and refined analysis of the cosmic diffuse gamma-ray background (hereafter CDG) in the energy range 0.8–30 MeV with the Compton telescope COMPTEL onboard the Compton Gamma-Ray Observatory. This analysis extends earlier work **on the extrapolation method**, using improved instrumental-background treatment and more data. We have identified all major instrumental-background lines and included the results of a detailed study of the instantaneous instrumental continuum-background characteristics. Furthermore, we used all available COMPTEL data at high galactic latitudes, rather than only those from the Virgo region and the south Galactic pole.

The new “whole-sky” average CDG spectrum again shows no evidence for an MeV-bump, merges smoothly with the spectra at higher and lower energies, and is consistent with a transition from a softer to a harder component around a few MeV. This spectrum is consistent with previous COMPTEL results from the Virgo region **and all-sky model fitting analysis** within statistical and systematic uncertainties. In addition, comparison of the CDG intensity from various regions of the sky allows us to place limits on the large-scale anisotropy of the CDG in selected energy bands. Upper limits on the relative deviations from isotropy consistent with the data at the 95% confidence limit range from about 24% to about 45% on scales of a few steradian.