

Limits on MeV Emission from Active Galaxies Measured with COMPTEL

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We provide cumulative flux limits in the COMPTEL energy range for a large sample of high-energy active galactic nuclei (AGN) of general interest. In particular, we present the cumulative two-sigma upper limits to the time-averaged MeV-emission measured with COMPTEL from AGN and other unidentified gamma-ray sources detected at high Galactic latitudes ($|b| > 10^\circ$). These limits were derived using composite COMPTEL all-sky maximum-likelihood maps for the 4.5-year period covering Phases 1 through 4 of the CGRO mission (1991-1995). The composite all-sky maps were produced from standard-processing COMPTEL datasets for individual CGRO viewing periods, in four standard energy bins spanning the sensitive range of COMPTEL (0.75-1, 1-3, 3-10, and 10-30 MeV). We describe the data-processing procedure, and compare it to related methods for obtaining all-sky maximum likelihood maps using COMPTEL data. From these maps we have extracted statistical likelihoods, significances of potential source detections, and associated fluxes, errors, or upper limits, for an extensive list of target objects. In the choice of candidate objects, emphasis was placed on known or suspected gamma-ray sources, particularly those detected in neighboring energy bands to COMPTEL by the CGRO/EGRET and OSSE instruments. Finally, we assess the implications of our limits on the possible contribution of AGN to the diffuse gamma-ray background measured by COMPTEL in the MeV regime.