

The COMPTEL instrumental-line background

G. Weidenspointner, M. Varendorff, U. Oberlack, S. Plüschke, R. Diehl, V. Schönfelder (MPE), D. Morris, M. McConnell, J. Ryan (UNH), S.C. Kappadath (LSU)

The instrumental-line background of the Compton telescope COMPTEL onboard the Compton Gamma-Ray Observatory is due to the activation and/or decay of a number of different isotopes. The major components of the COMPTEL instrumental-line background can be attributed to eight individual isotopes, namely ^2D , ^{22}Na , ^{24}Na , ^{28}Al , ^{40}K , ^{52}Mn , ^{57}Ni , and ^{208}Tl . In addition, evidence for the presence of ^{27}Mg has been obtained in the search for gamma-ray lines from supernovae. The identification of the instrumental lines with specific isotopes is based on the line energies as well as on the variation of the activity with time, cosmic-ray intensity and deposited radiation dose during passages through the South-Atlantic Anomaly. The characteristic variation of the activity due to an individual isotope depends on its life-time, orbital parameters such as the height of the satellite above Earth, and the solar cycle.