

# A Search for 2.2 MeV $\gamma$ -Ray Emission from X-Ray Binaries

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The COMPTEL experiment on the Compton Gamma Ray Observatory, with its large FoV imaging capability, has successfully surveyed the entire sky in the 0.75–30 MeV energy range. Within the energy range of COMPTEL is the neutron capture line at 2.2 MeV. Various scenarios of accretion onto compact objects predict potentially observable 2.2 MeV line fluxes from X-ray binary systems. The models suggest that the neutron capture process may take place at various points within the binary system. Unshifted line emission would result from neutron capture in the atmosphere of the compact object's companion star. COMPTEL provides the best opportunity to test such models. Despite the presence of a strong background line at 2.2 MeV, COMPTEL provides an unprecedented sensitivity in this energy range. The available data (accumulated over the first 3 years of the CGRO mission) provides a COMPTEL narrow-line sensitivity of  $\sim 1 \times 10^{-5} \text{ cm}^{-2} \text{ s}^{-1}$ . This is approximately an order-of-magnitude below the upper limits which were derived for a few selected objects from SMM data. This also coincides with the upper range of possible flux values predicted by the available models. Here we shall report on the results of our all-sky imaging effort at 2.2 MeV and, in particular, on search for (unshifted) 2.2 MeV emission from X-ray binary systems.