On the Evidence for MeV Emission from Cygnus X-1

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A number of observers have now reported measurements of 1-10 MeV emission from the black-hole candidate Cygnus X-1. The positive measurements are generally of marginal statistical significance and some conflict with other observations which provide only upper limits to the emission in this energy range. Nonetheless, the implications of MeV emission are of considerable interest. Physical mechanisms which may be involved in the production of such photons include relativistic plasma processes, nuclear line emission and emission resulting from pion production. All of these processes would presumably take place within the accretion disk. Here, we review the present observational and theoretical status and discuss ways in which future gamma-ray experiments (e.g., GRASP) may contribute to our understanding of this source.