10.05 Identifications of Southern X-ray Sources With the HEAO-1 Scanning Modulation Collimator. R. RENTILLAND, M.T., H. BROAD, A. MATHEWS, W. ROBERTS, J. MAVEL, J. PATTISON, D. SCHWARTZ, CFA. The data base from the modulation collimator (MC) on HEAO-1 is now being systematically surveyed in order to optically identify sources with 3 to 4 sigma MC detections. Optical counterparts of HEAO-1 sources tend to be the brightest and hence closest examples of each class. They are thus especially amenable to further study.

At CTIO, we made observations of some 40 X-ray fields with 2-color (U,B) Schmidt plates. We selected promising objects for further study on the basis of their UV excess or relative brightness and their location in an MC error region. We then carried out photometry and spectroscopy on many of these objects. There are currently several identifications, both galactic and extragalactic, and we expect others will be forthcoming as we complete our analysis of the optical data.

R. Broad is a visiting resident astronomer at CTIO on leave from MIT.

10.06 Optical Identifications of Galactic Bulge X-ray Sources. J. Grindlay, F. Herzt, and R. Schly, Harvard-Smithsonian Center for Astrophysics. -- Precise X-ray positions with 90% confidence radii of 3 arcsec have been derived from the reprocessed HRI data obtained with the Einstein X-ray Observatory. A large fraction of the bright galactic bulge X-ray sources (GX sources) hitherto unidentified were observed with Einstein, including GX3+1, GX5-1, GX9+1, GX11+1 and GX17+2. The newly derived positions for each of these sources were observed with the CCD camera system at Mt. Hopkins on the MMT and the 0.4m telescope at FLMO. A faint stellar object (m_v=19-22) was found in the HRI error circle for each source. The CCD images were obtained in either R or I and show that these objects are, in most cases, heavily reddened (as expected from the large column densities derived from low-energy X-ray cutoffs). The proposed identification of GX17+2 is especially interesting as it is nearly superimposed (within 1 arcsec) on the much brighter G star (m_v~17) previously suggested (Grindlay 1981, IAU Circ. 3620) and the radio source position newly measured with the VLA (Grindlay and Seaquist 1982, in preparation).

Implications of these results for the origin of galactic bulge X-ray sources will be discussed.

10.08 X-ray Sources in the Pleiades, by G. Micela, U. of Palermo; S. Serio, G.S. Vaiana, Obs. Astron. di Palermo; L. Colus, CFA. -- We present results from our ongoing analysis of X-ray observations of the Pleiades. This region was observed twice on consecutive days with the IPC and once with a deep HRI exposure. We have identified ~20 sources with X-ray luminosities in the range 10^2-10^5 ergs/sec; sources show both short- and long-term variability. The majority of the X-ray sources are identified as cluster members; for the remainder the optical identification is still in progress. We will discuss age dependence of stellar X-ray emission using Pleiades, Nymadye and other stellar data.

10.09 A Cold Dam Model for Dwarf Novae and X-ray Transients. J.C. Wheeler and J.K. Cannizzo, Univ. of TX. -- Vertically integrated steady-state accretion disk models incorporating realistic opacities, ionization structure, and convective flux are used to determine the conditions for the onset of thermal instability. The calculations show that matter transferred at a constant rate in a binary system will accumulate in a cold, dense torus until the instability occurs at about 2500 K and the matter heats to greater than 10,000 K and forms an approximately steady-state disk structure. Vertically averaged time-dependent models are used to compute the build up of the cold torus and the post-instability flow. These models give an "instability strip" in the transfer-rate/orbital-period plane which encompasses observed transient systems and excludes classical novae. The models give a reasonably quantitative account of the repetition period, rise time, burst duration, and optical and bolometric luminosity of dwarf novae and low mass "soft" X-ray transients. The models also account for many of the observed properties of the high mass "hard" X-ray transients, suggest reasons for the important differences from the "soft" transients, and raise questions concerning net mass loss from such systems which may be relevant to the problem of hard and soft fluxes from Her X-1. Photometry of Her X-1 in quiescence by Robinson et al. is consistent with the presence of the predicted cold torus.


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