ULTRAVIOLET OBSERVATIONS OF AM HERCULIS

J.C. Raymond, G. Branduardi, A.K. Dupree, G. Fabbiano and L. Hartmann
Harvard-Smithsonian Center for Astrophysics, Cambridge, MA

Spectra of AM Herculis taken with IUE show a continuum which is partially eclipsed in phase with the X-ray eclipse and can be separated into two components; a black-body component (kT_{BB} = 25 - 30 eV) which accounts for the ¼ keV X-rays and the eclipsed UV continuum; and a component roughly described by $F_\nu \propto \nu^{-1}$ which is not eclipsed.

Am Herculis is a binary X-ray source believed to contain a strongly magnetic white dwarf accreting matter from an M dwarf (cf. Stockman et al. 1977; 1978). The ultraviolet continuum of AM Her consists of a component having a Rayleigh-Jeans spectrum, which is eclipsed in phase with the X-rays, and a flatter component which is not eclipsed (Raymond et al. 1979). We obtained thirteen low dispersion, short wavelength spectra with the IUE satellite on March 17, 1979 providing uniform coverage over nearly two cycles. The IUE instrument is described by Boggess et al. (1978).

By assuming that the "black body" component is completely eclipsed and that the spectral shape of the flat component is constant ($F_\lambda \propto \lambda^{-1.16}$), we can separate the contributions of the two components of the UV continuum. Figure 1 shows the black body and flat contributions to the flux at 1400 Å. The units are 10^{-13} ergs cm^{-2} s^{-1} $Å^{-1}$. Phases are based on the primary minimum in V and the period of Szkody and Brownlee (1977).

The similarity of the black body light curve to the soft X-ray light curve (Tuohy et al. 1977) strengthens the hypothesis that a single emission region accounts for both. If the emission is indeed black body in nature, $T_{BB} \sim 30$ eV. A power-law fit to the difference between the continua at maximum and minimum of the black body light curve yields $P_\lambda \propto \lambda^{-3.75}$. The uncertainty in spectral index is difficult to estimate, but ± 0.5 is probably realistic.

Models currently available (Lamb and Masters 1979; King and Lasota 1979) do not match the observed Rayleigh-Jeans component in the U.V.

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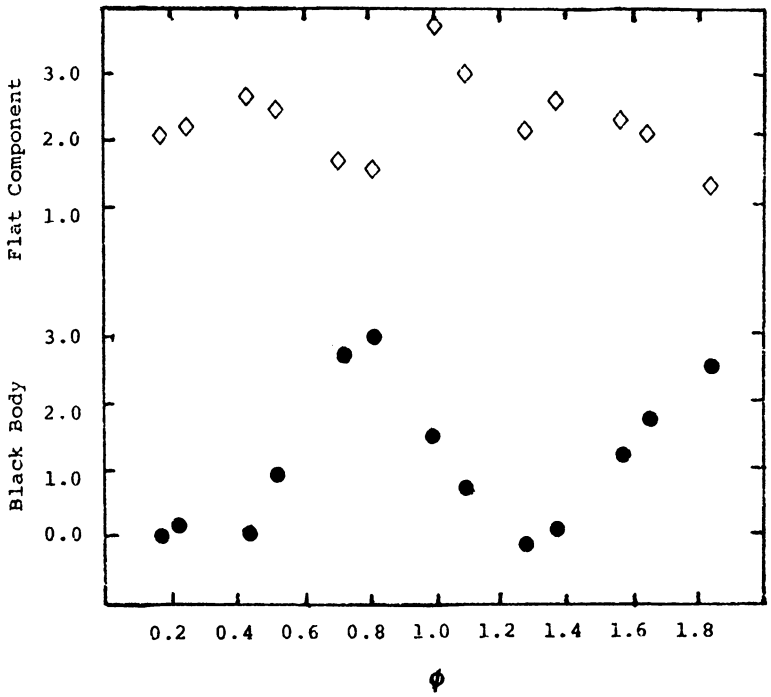

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DISCUSSION FOLLOWING RAYMOND, BRANDUARI, DEPREE, FABBIANO AND HARTMANN

Pringle: These stars seem to have a split personality since there was a certain amount of discussion on them at the IAU Colloquium on White Dwarfs held last week in Rochester. At that meeting Dr. Don Lamb seemed happy that his work could accommodate the ultraviolet observations you now report by taking a less massive white dwarf. I regret that he is not here to tell us more about the model.

Tapia: At the risk of sounding rather conformist I would like to say that the theoretical efforts to interpret AM Herculis objects appear to me more than satisfactory. We should not forget that our geometrical models are naive and we can't avoid it. One example is the sketch of the accretion column that I presented in my talk. Perhaps we should be as demanding of the geometry as we are of the physics.

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