

R. S. POLIDAN and T. E. CARONE
University of Arizona, Lunar and Planetary Laboratory,
Tucson, Arizona, U.S.A.

ABSTRACT. In this paper we present recent results from a continuing investigation of cataclysmic variables in the 500 to 1700 Å region with the Voyager ultraviolet spectrometers. Observations of outbursts show a substantial delay (~0.5 day) in the rise to maximum in the FUV (912-1200 Å) with respect to optical wavelengths. Both FUV and optical light decline simultaneously. Flux distributions show a significant flattening in the FUV and with the possible exception of CPD-48 1577 no EUV flux has been observed in any cataclysmic variable. CPD-48 1577 shows a marginal, 2σ , EUV flux.

1. OBSERVATIONS

The ultraviolet spectrometers (UVS) aboard the Voyager 1 and 2 spacecraft have been described by Broadfoot et al. (1977) and their inflight performance is summarized in Broadfoot et al. (1981). Briefly, both instruments are objective grating spectrometers which cover the 500-1700Å range at a dispersion of 9.26Å per detector channel with an effective spectral resolution of approximately 20Å. The field of view, which is defined by a mechanical collimator, has a full-width at half-maximum of 0°097 in the dispersion direction and 0°87 in the cross dispersion direction. Maximum sensitivity is achieved shortwards of 1200Å so that Voyager spectra provide a convenient complement to longer wavelength IUE data. The absolute calibration employed here is that of Holberg et al. (1982). A detailed description of the reduction techniques can be found in Drilling, Holberg and Schonberner (1984) and Polidan, Stalio and Peters (1986).

For most CV's the signal-to-noise ratio longward of 1300 is too low to produce acceptable data. Similarly, near Ly α (1175 - 1250) the data are dominated by backscattered solar Ly α . Thus, for most of the following discussion we will be concerned only with the 500-1175 Å region.

Table 1 presents the existing Voyager cataclysmic variable observations as of 1 July, 1986.

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TABLE 1

Voyager Cataclysmic Variable and Related Objects
(July 1, 1986)

SS Cyg	VW Hyi	V3885 Sgr	V Sge
U Gem	Z Cam	CPD-48 1577	RW Sex
V603 Aql	AG Peg	EG And	RR Tel
Z And			

2. OUTBURST LIGHT CURVES

Voyager observations of outbursts in SS Cyg (long duration) and VW Hyi (ordinary and superoutburst) have been discussed in detail by Cannizzo, Wheeler and Polidan (1986) and Polidan and Holberg (1986). Both objects display an approximately 0.5 day delay in the rise to maximum in the FUV with respect to optical wavelengths. No delay is observed during the decline from maximum light. VW Hyi also shows a "double peaked" superoutburst light curve, the first peak closely resembling a bright ordinary outburst in shape.

3. FLUX DISTRIBUTIONS

Figures 1-4 show FUV flux distributions of SS Cyg in outburst, VW Hyi in superoutburst, V3885 Sgr, and the CPD-48 1577. Of most significance is the flat FUV continuum and the total absence of EUV flux in all except for CPD-48 1577. For all stars observed the rising IUE flux distribution does not continue into the FUV. The shape of the outburst FUV flux distribution of these stars are very similar to that of HZ43, a 57500 K white dwarf. This argues for a significantly different inner accretion disk temperature structure than currently predicted by models. CPD-48 1577 and RW Sex (not shown) appear to have a flux distribution that shows a greater turnover at shorter wavelengths than other cataclysmic variables. CPD-48 1577 also shows a suggestion (2σ) of EUV flux. Further observations should test this possibility.

With the Voyager resolution ($\sim 20 \text{ \AA}$) only limited spectral line information can be obtained. All the observed cataclysmic variables show (with varying degrees of confidence) absorption features at 1030 and 975. These are likely to be OVI/Ly β and CIII/Ly γ . A long term (3 day) set of observations on V3885 Sgr indicated substantial variability in the 1030 feature in this star.

4. CONCLUSION

Voyager observations of CV's have found a 0.5 day delay in the rise to maximum in the FUV relative to optical wavelengths and much flatter flux distributions for $\lambda < 1200 \text{ \AA}$. Detectable EUV flux is very unusual with only CPD-48 1577 indicating a marginal detection. Absorption

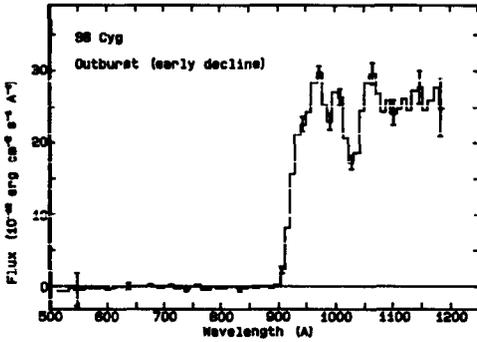


FIGURE 1

Voyager 2 observation of SS Cyg (Jun 84). Error bars are representative $\pm 1 \sigma$ errors.

FIGURE 2

Voyager 2 observations of VW Hy1 (Oct. 84). Error bars as in Figure 1.

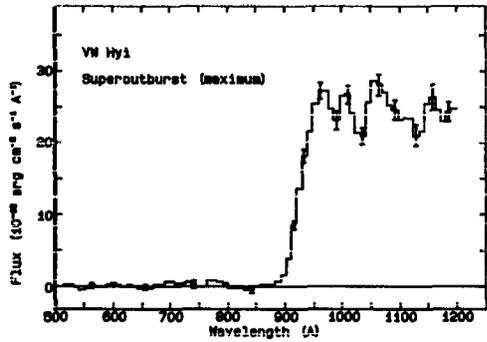


FIGURE 3

Voyager 2 observations of V3885 Sgr (Apr. 85). Error bars as in Figure 1.

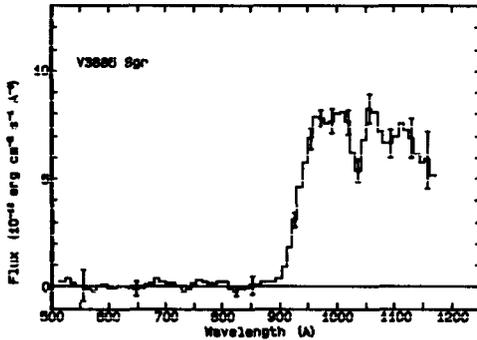
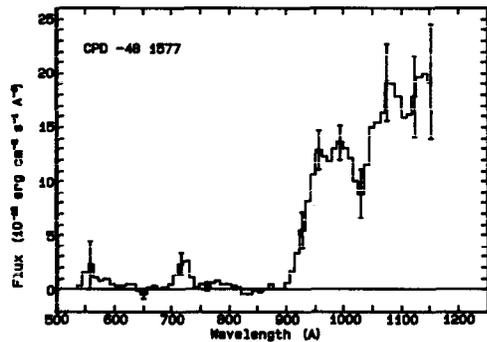


FIGURE 4

Voyager 1 observations of CPD-48 1577 (Jun. 85). Error bars as in Figure 1.



lines, in outburst, are seen at 975 (CIII/Ly γ) and 1030 (OVI/Ly β). Both appear to be variable.

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