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1982 UBVR PHOTOMETRIC OBSERVATIONS OF XY UMa

As part of our program of photometric observations of RS CVn stars, we have observed the short-period (0.48 day) system XY UMa (SAO 27143). The primary star is G2-G5; the secondary K5 (Geyer, quoted by Lorenzi and Scaltriti, 1977). The observations were made in the UBVR instrumental bands on two nights in January and February of 1982. UNM's Capilla Peak Observatory's 61-cm telescope employing a computer-controlled, single-channel, photon-counting photometer with an EMR 641A phototube (cooled to -20°C) was used for all observations.

The results of our observations are shown in Figures 1-4. The error in any data point is ± 0.01 magnitude. SAO 27139 ($+54^{\circ}1278$) was used as the comparison star, and the phases were calculated using $\text{HJD}=2435216.5086 + 0.478995E$ (Wood, Oliver, Florkowski, Koch, 1980). Table I gives a phase log for the observations.

XY UMa has been found to exhibit large and long-term changes in its light curve and system brightness. Geyer (1977) and Geyer and Metz (1977) attribute the variability to starspot activity of the hotter component. Geyer's light curves show strong asymmetries, even the disappearance of the secondary eclipse

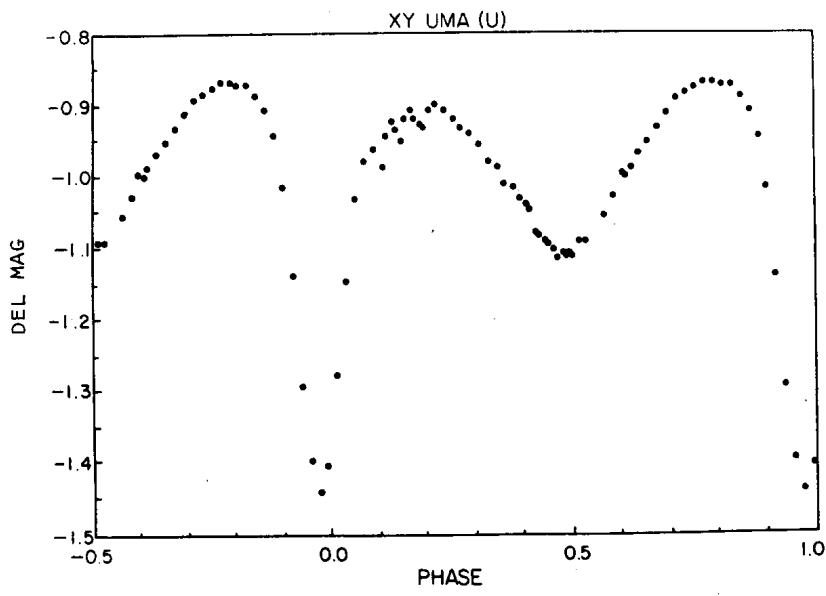


FIGURE 1

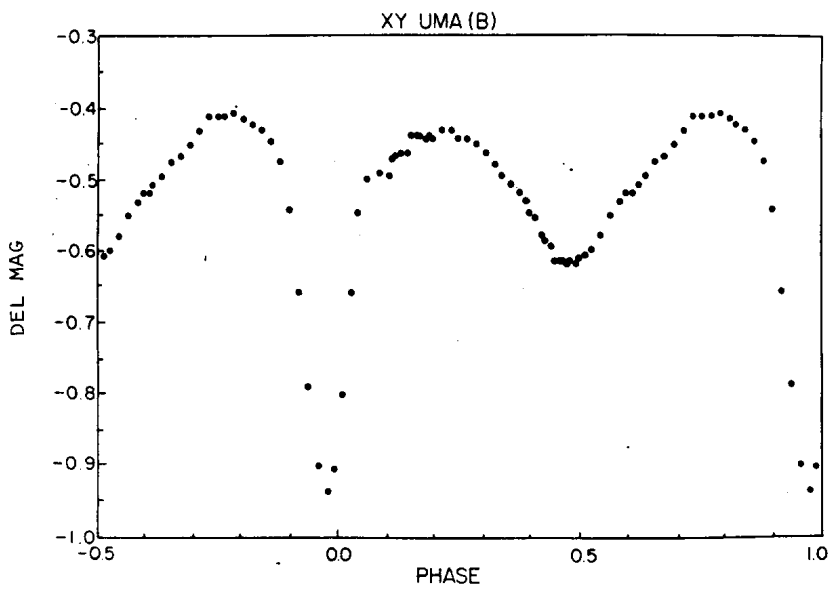


FIGURE 2

3

XY UMA (V)

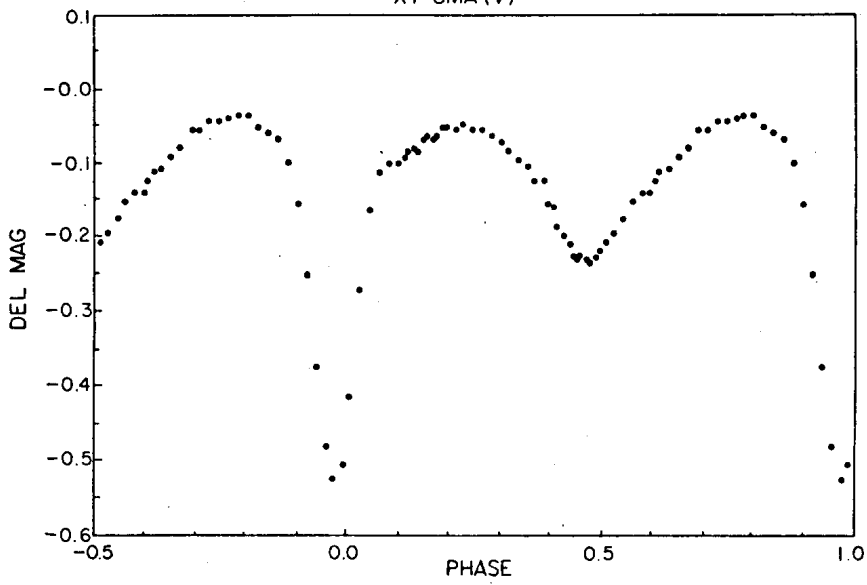


FIGURE 3

XY UMA (R)

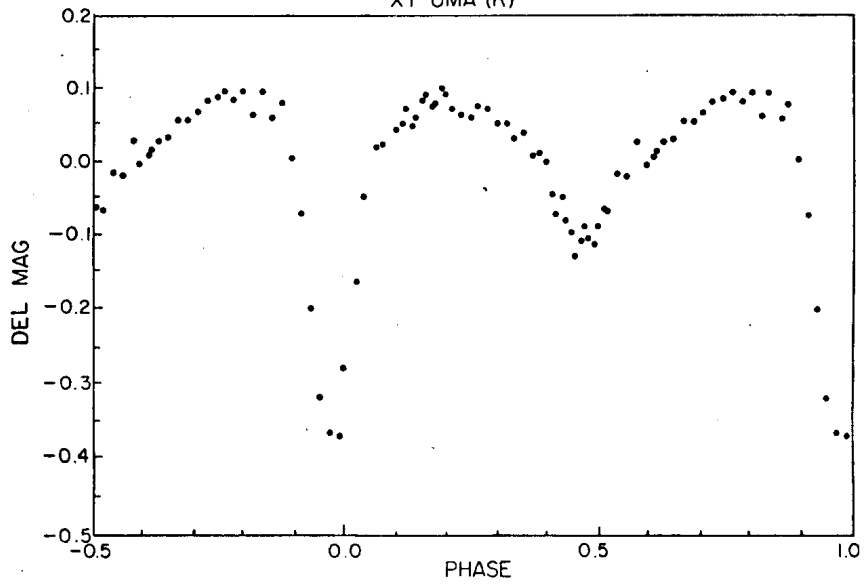


FIGURE 4

in 1975. Our light curves are similar to the observations made by Geyer in 1976. Both primary and secondary eclipses are asymmetric with the secondary becoming more pointed at longer wavelengths. Also, the light curve is depressed around phase 0.25 relative to phase 0.75 by 0.04 magnitude at U, 0.03 at B, 0.02 at V, and 0.01 at R. This would indicate a distortion wave of small amplitude with a minima at about phase 0.25.

Table I

XY UMa 1982 Phase Log

<u>Date</u>	<u>Phase</u>
1-31	0.04 → 0.20
2-20	0.12 → 0.62

M. ZEILIK, D. BATUSKI, R. ELSTON, G. HENSON, P. SCHMOLKE, P. SMITH

Capilla Peak Observatory

Department of Physics and Astronomy

University of New Mexico

Albuquerque, New Mexico 87131

U.S.A.

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