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1981 PHOTOMETRY OF UX ARIETIS

As part of our long-term project of photometry of RS CVn stars, we observed the non-eclipsing system UX Ari (= HD 21242) in fall-winter 1981. All observations were made with UNM's 61-cm telescope at Capilla Peak Observatory. The photon-counting photometer uses a cooled (-20°C) EMR 641A phototube. The comparison star was 62 Ari (V = +5.54, G5). Integration times were chosen so that the statistical error in each observation was  $\pm 0.01$  mag. or better.

Figures 1-4 show the magnitude differences (comparison-source) in the UBVR instrumental bands. The phases were calculated from  $HJD=2440133.75 + 6.43791 E$  (Landis et al., 1978). The distortion wave in the light curve is clearly visible: it peaks at about phase 0.59, and bottoms out at phase 0.97. The amplitude of the wave (peak to peak) in the instrumental magnitude system is: 0.15 mag at U, 0.17 mag at B, 0.21 at V, and 0.22 at R, with the system being reddest at the distortion wave minimum.

The phase and amplitude of the distortion wave in UX Ari has undergone erratic behavior in the past 10 years (see Guinan et al., 1981, and the references cited there). In particular the phase of the minimum of the distortion wave moved toward decreasing orbital phase in 1972-77; but between early and late 1980, it moved toward increasing phase. For 1981.0, Guinan et al. (1981)

UX ARI (B)

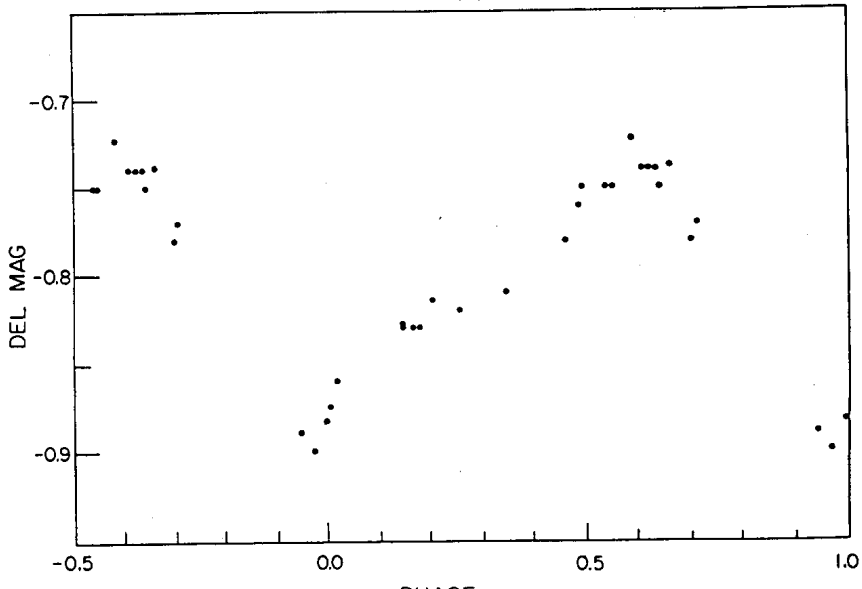


FIGURE 1

UX ARI (U)

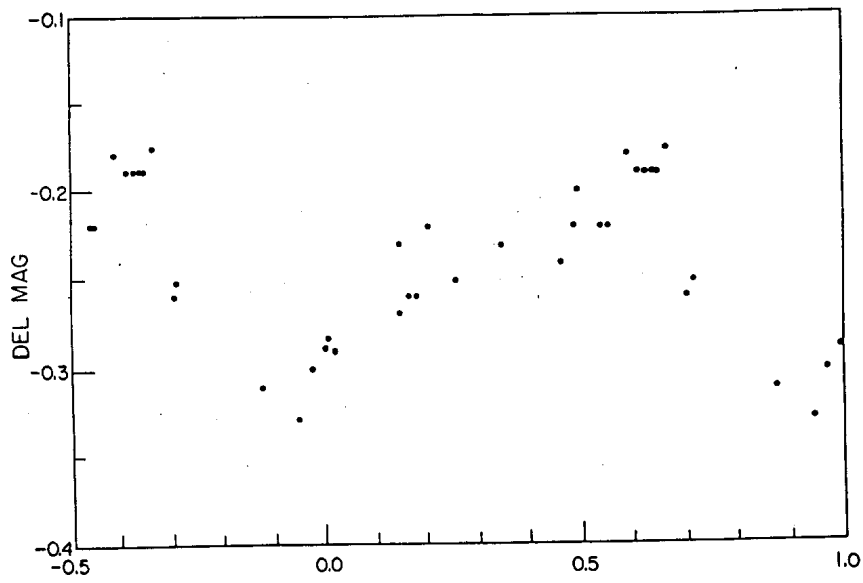


FIGURE 2

3

UX ARI (V)

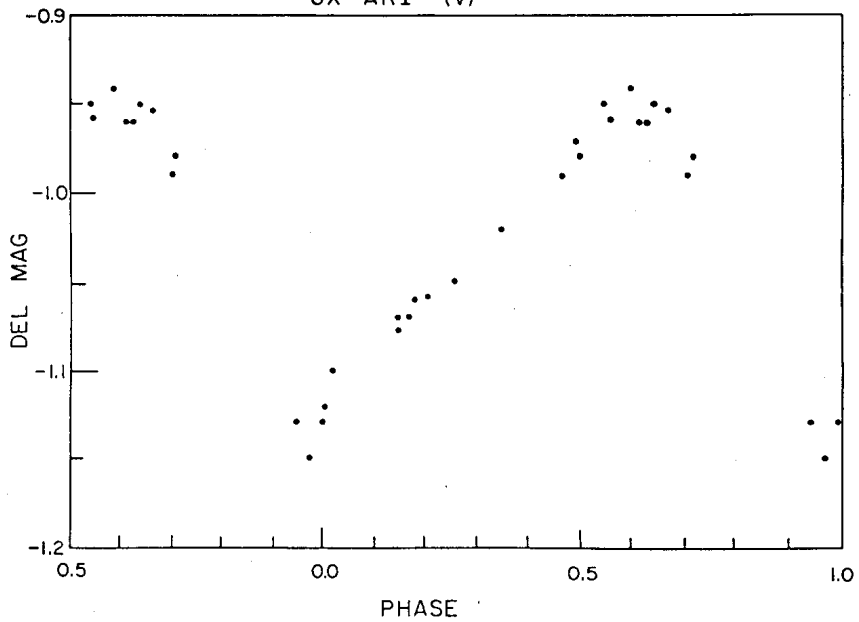


FIGURE 3

UX ARI (R)

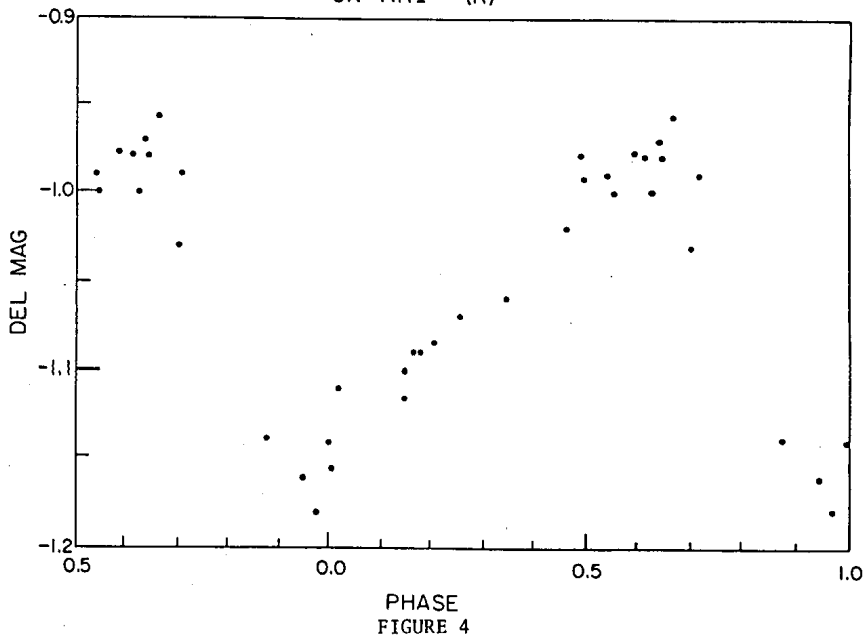


FIGURE 4

cite a phase 0.97 for minimum, the same as our late 1981 result. So the distortion wave's phase has remained steady for a year and perhaps will move retrograde again.

From 1977 to 1981, the amplitude of the wave at V has varied from 0.04 to 0.17, with Guinan et al. (1981) giving 0.16 for 1981.0. Our results indicate that the amplitude has increased since then.

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