

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS
 Number 945

Konkoly Observatory
 Budapest
 1974 November 26

1974 UBV PHOTOMETRY OF THE RADIO STAR UX ARIETIS = HD 21242

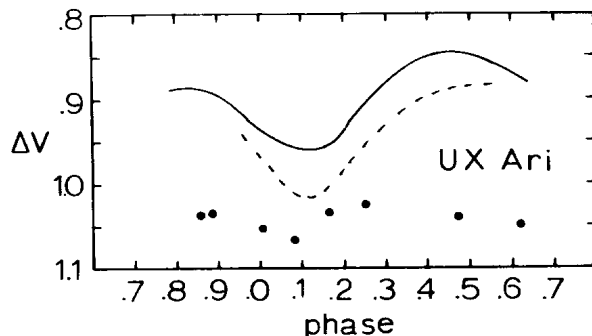
The purpose of this short note is to announce that the light curve of UX Arietis has changed. UX Ari is of particular interest because it is the brightest ($V \approx 6^m.5$) RS Canum Venaticorum-type binary known to date (Carlos and Popper 1971) and because it is a radio star (Gibson et al. 1975). The last photometric observations were made in 1972 (Montle and Hall 1972; Atkins and Hall 1972, Hall, Montle, and Atkins 1975).

We obtained 30 differential UBV observations with respect to 62 Arietis on 8 nights in October 1974. The constancy of 62 Ari was again verified, via 10 differential observations with respect to BS 999 on 7 nights in October 1974. The mean difference was consistent with the value found by Hall, Montle, and Atkins; and the standard deviation of each observation from that mean was about $\pm 0^m.013$ in all three colors.

In the Figure below we have plotted nightly normals of the V observations. Here Δ is in the sense UX Ari minus 62 Ari, and the phase is reckoned with the ephemeris

$$JD(\text{hel.}) = 2440133.76 + 6^d.43791 \cdot E$$

which we derived from data in Table II of Carlos and Popper. The solid line indicates roughly the light curve as of early 1972; the broken line, as of late 1972.



We can make three conclusions. (1) The overall level of the light curve has decreased: by more than $0^m.1$. (2) The amplitude has dwindled dramatically: from about $0^m.14$ to about $0^m.04$. We note that the amplitude of the wave in RS CVn is also variable (Hall 1972), having ranged between $0^m.18$ and about $0^m.05$. (3) There is some indication that minimum light still occurs where it did in 1972: around $0^p.1$. If so, then this would imply that, relative to the orbital motion, the wave did not migrate measurably between 1972 and 1974.

We are continuing UBV photometry of UX Ari and encourage others to observe this interesting system also.

November 15, 1974

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