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1990 AND 1991 PHOTOMETRY OF UZ LIBRAE

Bopp *et al.* (1984) report photometry and spectroscopy of UZ Librae (= #102 in the catalog of Strassmeier *et al.* 1988). Grewing *et al.* (1989) use both photometric and spectroscopic data to deduce properties of the individual components of UZ Lib and to refine both the photometric and orbital periods. Heckert and Hickman (1991) have UBV photometric data from 1988 and 1989.

In this paper, I present new UBVRI photometry from May 1990 and from March and May 1991. I used the 24 inch telescope at Mount Laguna Observatory operated by San Diego State University. The photometer was equipped with a Hamamatsu GaAs phototube operating at -1450V. The data are transformed to the standard Johnson-Cousins UBVRI system. The companion and check stars are BD -07° 4044 and BD -08° 3998. Following Grewing *et al.* (1989) I computed the orbital phase using:

$$\phi = 2445428.88 + 4.767885 E.$$

The 1990 ΔV light curve (Figure 1) has roughly the same 2 spot structure as the 1988 and 1989 light curves (Heckert and Hickman 1991). However the slightly brighter maximum light at roughly phase 0.85 is consistent with the shrinking of the larger spot at phase 0.01 between 1989 and 1990. This trend continued into 1991. The 1991 light curve shows a single peak structure. The spot at phase 0.01 is gone leaving a single spot at phase 0.5. Note that the points on the 1991 curve at phases 0.01 and 0.21 are from March 1991, and the others are from May 1991. These 2 points are about 0.02 magnitudes fainter than the trend of the other points on the curve. This faintness suggests that the spot had not quite

UZ LIBRAE - 1990, 1991

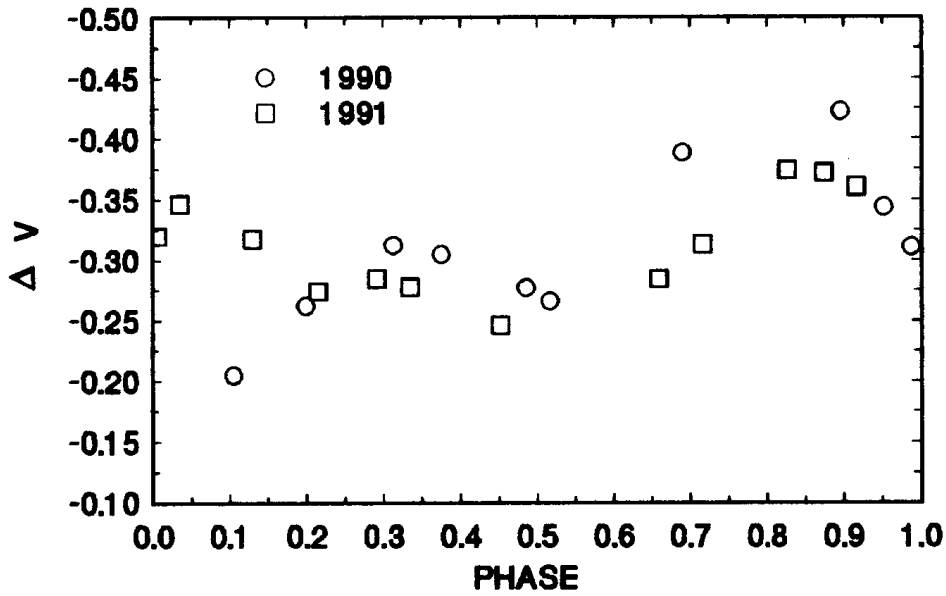


Figure 1

UZ LIBRAE - 1990, 1991

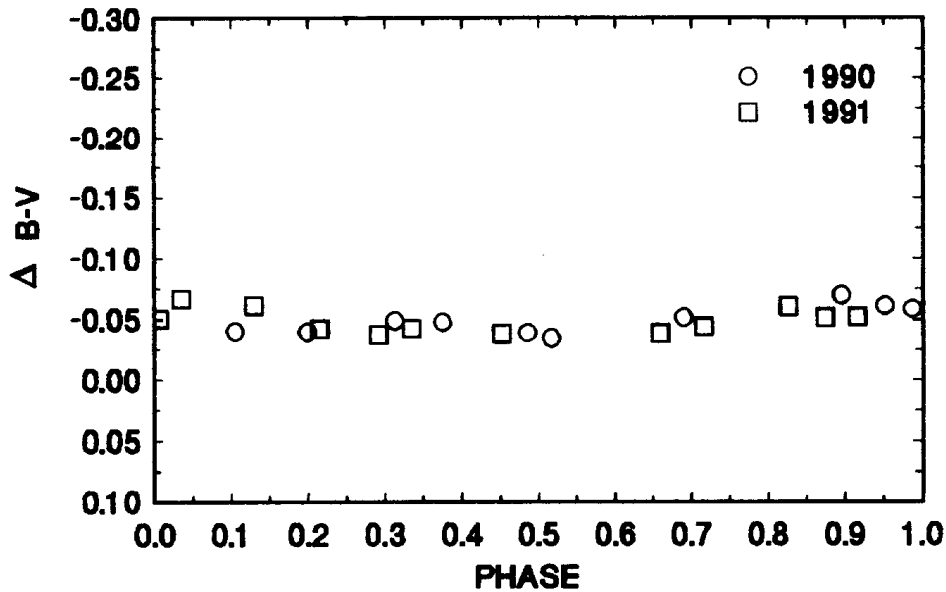


Figure 2

UZ LIBRAE - 1990, 1991

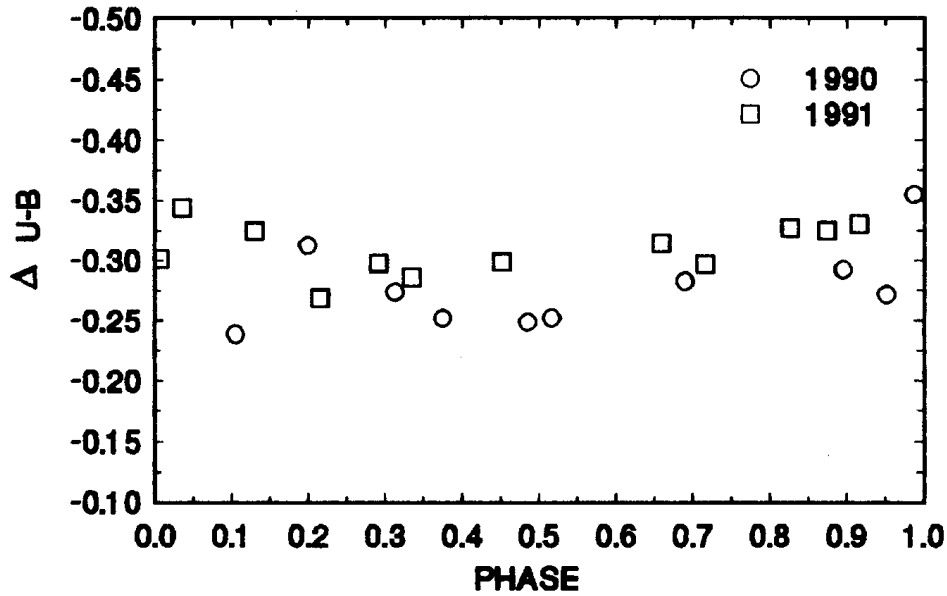


Figure 3

UZ LIBRAE - 1990, 1991

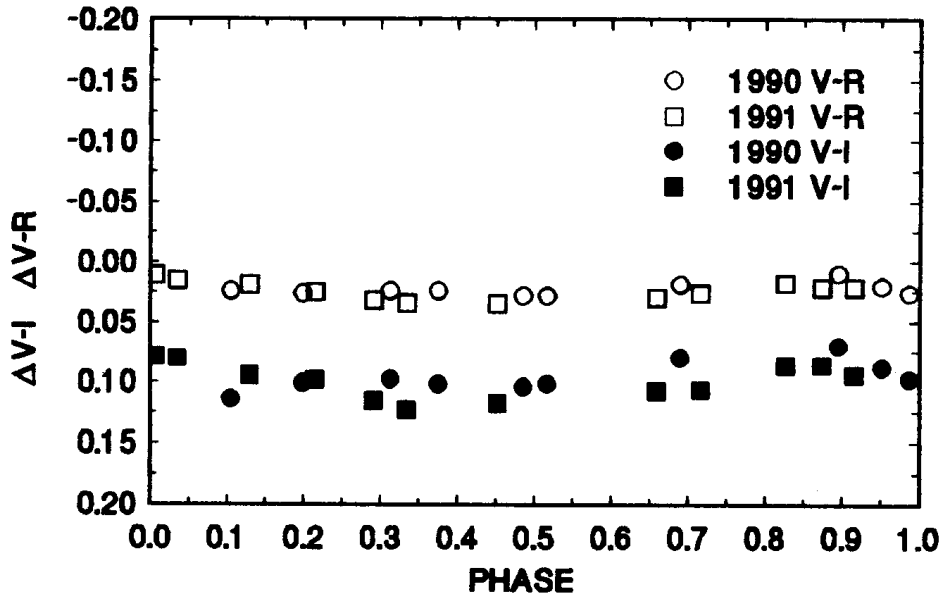


Figure 4

completely disappeared by March 1991. The amplitude of the ΔV light curves are 0.22 and 0.12 magnitudes in 1990 and 1991 compared to 0.2 and 0.3 magnitudes in 1988 and 1989 (Heckert and Hickman 1991). The relative stability of the 2 spot structure from 1988 to 1990 combined with the changes in amplitude suggests that the basic spot structure of UZ Lib remains relatively stable over time scales of a few years, but that the size of the spots can vary over faster time scales. Also note that during 1991 the star was fainter at maximum light than during 1990. This fact suggests that the spot that broke up between 1990 and 1991 did not disappear completely, but rather spread more evenly around the star.

The $\Delta(U-B)$ (Figure 3) color curve shows that the star is more red at minimum light. The $\Delta(B-V)$, $\Delta(V-I)$, and $\Delta(V-R)$ (Figures 2 and 4) color curves also show this trend but with a very small amplitude. This behavior is what one would expect if cooler spots cause the photometric variations.

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