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OBSERVATIONS OF THE SPOT STARS EQ Vir AND UZ Lib IN 1977

There is a rapidly increasing amount of observations substituting the existence of magnetic active stars on or in the vicinity of the lower main sequence. Ca II and even hydrogen emission lines are often combined with the so called BY Dra syndrome, a sinusoidal light change referred to star spots. EQ Vir is one of the better known stars of this type. Broad band photometry is known from the years 1971 (Ferraz Mello and Torres, 1971) and 1975 (Hartmann, 1976). The amplitude has changed during that time from  $0^m.10$  to  $0^m.06$ .

In a  $24^d$  interval in March and April, 1977 this star has been observed photoelectrically in B with the 61 cm Bochum telescope at the European Southern Observatory (La Silla/Chile). The measurements are plotted in Fig. 1. The underlying ephemeris (period

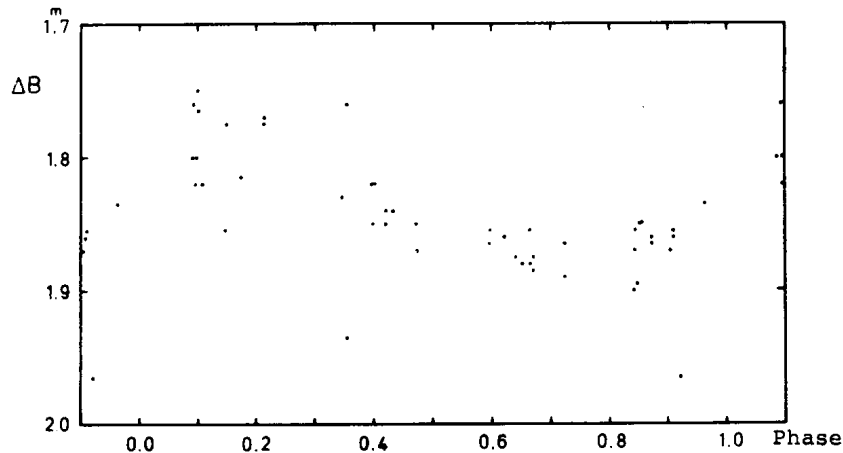


Figure 1: 1977 observations of EQ Vir.

by Torres and Ferraz Mello, 1973) was

$$2443219.30 + 3^{\text{d}}.96 \cdot \text{E}.$$

Apparently the amplitude of the light variation has recovered to  $0^{\text{m}}.08$ . Also the shape of the light curve has changed, showing the complete rise in only a quarter of the period. It is not clear, if the observed minima of different years belong to the same spot groups. In such a case the change of the light curve shape could be a measure of differential rotation in late type dwarf stars.

UZ Lib is a puzzle for now half a century. Parenago (1931) classified this star as RR Lyrae type with a period of  $0^{\text{d}}.4413$ .

Wisniewski (1973) assumed that this object is a  $\beta$  Lyrae type eclipsing binary, with a sinusoidal light curve and a period of  $9^{\text{d}}.49976$ . However Evans and Bopp (1974) suspected it to be a BY Dra type star with a period of  $4^{\text{d}}.75$  - as a consequence of its Ca II emission lines (Bidelman, 1954).

This object has been observed during the same time interval as EQ Vir with the same instrument. The measurements are shown in Fig.2.

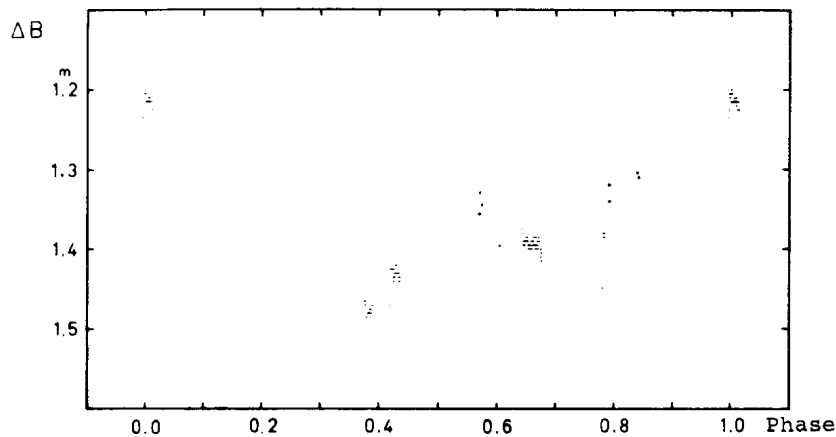


Figure 2: 1977 observations of UZ Lib.

They are plotted according to

$$2443222.15 + 4^{\text{d}}.75 \cdot \text{E}$$

i.e. the period suggested by Evans and Bopp. There is no difference in shape of the light curve halves, if the data are

drawn using Wisniewski's period twice that value. The shape of the light curve itself, however, has changed. The amplitude is only  $0^m.26$  compared with  $0^m.32$  five years earlier. There is a minimum  $0^p.38$  after maximum and secondary minimum around  $0^p.70$ . The light curve, sometimes of irregular shape is a further hint that this star belongs to the BY Dra class of stars. The observations are well in agreement with the assumption of two or more separated active regions on UZ Lib. Because of the variability of the light curve it is impossible to improve the period. Also it is again not clear, how long a certain spot group on this star can survive to be linked with later observations. The telescope, its equipment, and the reductions facilities have been supported by the Deutsche Forschungsgemeinschaft (grants Schm 160/9, 160/13, and 167/12). This should herewith be gratefully acknowledged.

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