

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

Number 1936

Konkoly Observatory
Budapest
1981 March 11

HU ISSN 0374-0676

A PHOTOMETRY OF AZ Vir

The variability of AZ Vir has been discovered by Jensch (1937). Although several authors observed about a dozen minima times, as late as 1974 Busch found the correct period of $0^d.35$ for this W UMa type eclipsing binary. A photoelectric light curve has been published by Meinunger (1977).

Photoelectric measurements of AZ Vir have been obtained in April 1976, May 1978, and April 1979. They have been carried out with the double beam photometer at the 1.06m reflector of Hoher List Observatory. The mainly used comparison star "b" is the same as that of Meinunger. Check stars "a" and "c" are 14^S west/ $8'$ south and 58^S east/ $4'$ south of AZ Vir, respectively, all stars being of the same order of magnitude.

Minima times have been determined:

JD hel.	2442885.413	Ep.	42781.0	O-C	$+0^d.003$
	2442885.591		42781.5		$+0^d.006$
	2442886.448		42784.0		$-0^d.011$
	2443656.424		44986.0		$+0^d.003$
	2443976.536		45901.5		$-0^d.003$

Epochs and O-C's are according to the ephemeris

$$\text{Min. I} = \text{JD } 2427926.4052 + 0^d.3496646871E$$

No larger period changes seem to be present during the last

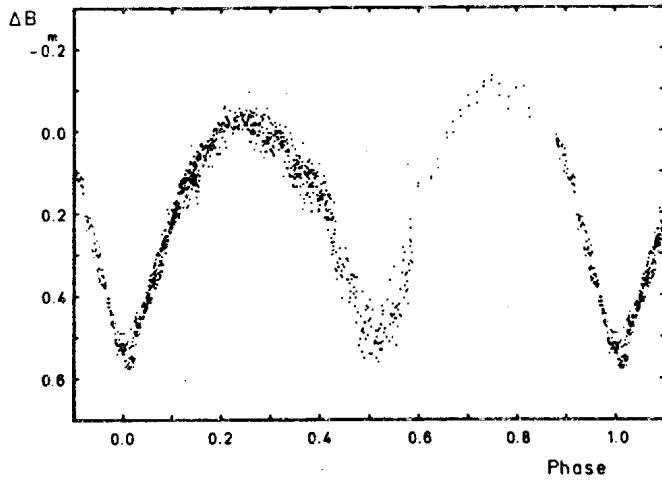


Fig. 1 B observations of AZ Vir

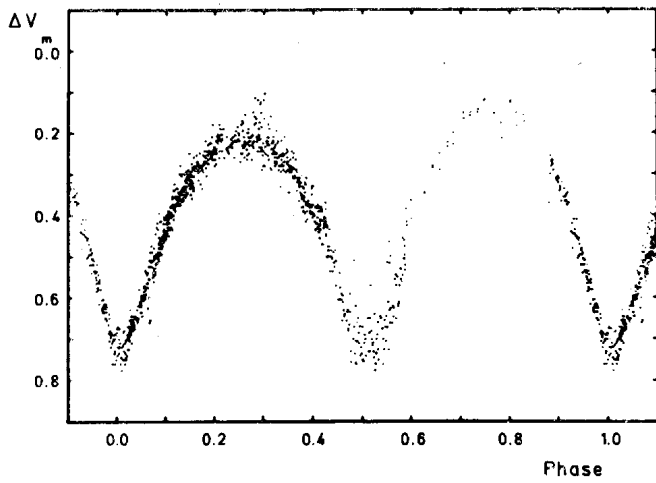


Fig. 2 V observations of AZ Vir

three decades.

Figs. 1 and 2 show the B and V measurements relative to star "b". Generally the light curves confirm the observations published by Meinunger (those phases should be shifted by 0.05 to place the deeper minimum at phase 0.0). Between 1976 and 1978 no changes in the light curve were detected. The 1979 measurements fill the gap between phases 0.65 and 0.85. Although the minima show some asymmetry and there are other indications of minor complications, an analysis of the orbital elements has been tried by means of the Russell-Merrill method and using the atlas of theoretical light curves for contact binaries by Anderson and Shu (1979). The former showed that the primary minimum is probably a transit (partial eclipses), but the rectified eclipses are moderately shallow, and no solution could be obtained. The latter method yields a best representation of the light curve with

$$\begin{aligned} q &= 0.65 \pm 0.10 & f &= 0.8 \\ i &= 70^\circ \pm 5^\circ & \beta &> 0 \end{aligned}$$

and full limb darkening.

With $k = q^{0.55}$, a good empirical relation for W UMa systems with periods shorter than 0.5 , a ratio of the radii $k=0.8$ is obtained.

A part of the work has been supported by the Deutsche Forschungsgemeinschaft (Schm 167/12). This shall be herewith acknowledged.

M. HOFFMANN

Observatorium Hoher List
5568 Daun / Eifel, BRD

References:

- Anderson, L., and Shu, F. H., 1979, *Astrophys. J. Suppl. Ser.*
40, 667
- Busch, H., 1974, *Mitt. Hartha Heft* 7, 6
- Jensch, A., 1937, *Eob. Zirk.* 19, 10
- Meinunger, L., 1977, *Mitt. Veränderliche Sterne Sonneberg* 7,
Heft 8, 185