

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3555

Konkoly Observatory
Budapest
16 January 1991
HU ISSN 0374 - 0676

PHOTOELECTRIC LIGHTCURVE IN TWO COLOURS AND IMPROVED ELEMENTS FOR
V724 AQUILAE

(BAV-Mitteilung Nr.57)

V724 Aql = 798.1933 was detected by Hoffmeister as a short period variable in the range between $11^m.0$ and $11^m.5$ (Hoffmeister, 1934). First investigation of this variable was done by Ahnert on plates of the Sonneberg sky-survey. He classified the variable as a cepheid, communicated 11 times of maximum light with one digit accuracy and elements for maxima (Ahnert et al., 1949). In the course of a photoelectric survey of northern cepheids, the variable proved to be an eclipsing binary of W UMa type (Oosterhoff, 1960). He published a normal lightcurve and the elements:

$$\text{Min} = \text{JD } 2436818.672 + 0^d.51752 \cdot E.$$

The low precision elements and the lack of further published observations made V724 Aql an interesting object for us. The variable was observed on eight nights from Aug. 1988 to July 1990 at the private observatory of F. Agerer, with an 0.35m automatic photoelectric telescope. For a description see Agerer (1988). The photometer was equipped with an uncooled EMI 9781 B PMT. Schott filters BG12 1mm + GG 385 2mm were used for B and GG 495 1mm for V. The diaphragm measured 32". BD+1^o4146 (FO) served as comparison star and BD+1^o4143 to check its constancy. Instrumental magnitude differences were converted to the international UB_V-system. Minimum timings are calculated with the Kwee - van Woerden method. Two primary and three secondary minima were observed (Table I). As both minima are of nearly equal depth, the distinction between them is uncertain. From our observations and the normal minimum by Oosterhoff we calculated improved elements using the method of (weighted) least squares as:

$$\text{Min} = \text{JD } 2436818.6721 + 0^d.51760028 \cdot E.$$

+5 +2

With these elements we reduced the photoelectric lightcurve (Fig. 1). Using the maximum timings by Ahnert, we calculated the times of the following minimum by adding $P/4$. The resulting O-C's seem to confirm the period found (Table I).

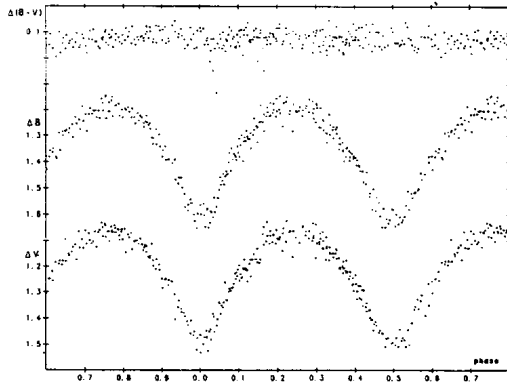


Figure 1 Differential B and V light and B-V color curves of V724 Aql

Table 1. Observed times of minima for V 724 Aql, epochs and residuals computed with respect to the ephemeris derived in this paper

No.	JD helioc.	Weight	Type	Epoch	(O-C)	Observer	Source
1	2426945.53	0	p	-19075	0.08	P.Ahnert (+P/4)	VSS 1.3
2	27277.53	0	p	-18433.5	0.04		
3	27633.53	0	p	-17745.5	-0.07		
4	28034.53	0	p	-16971	0.05		
5	28070.43	0	p	-16901.5	-0.02		
6	28422.43	0	p	-16221.5	0.01		
7	29024.73	0	p	-15058	0.08		
8	29102.63	0	p	-14907.5	0.08		
9	29158.53	0	p	-14799.5	0.08		
10	29923.43	0	p	-13321.5	-0.03		
11	30932.13	0	p	-11373	0.13		
12	2436818.672	10	E	0	-0.0001	P.T.Oosterhoff	BAN 15.199
13	47405.415	2	E:	20453.5	0.0057	F.Agerer	this paper
14	47412.3980	10	E	20467	0.0009		
15	47413.4320	10	E	20469	-0.0003		
16	48097.4413	10	E	21790.5	0.0002		
17	48098.4744	10	E	21792.5	-0.0019		

p denotes pg plate max. + P/4 to get time of next minimum (weight 0),
E photoelectric min. The minimum marked ":" received reduced weight.

F. AGERER D. LICHTENKNECKER†
Berliner Arbeitsgemeinschaft für
veränderliche Sterne e.V. (BAV)
Munsterdamm 90, D-1000 Berlin 41

References:

- Agerer, F.: 1988, BAV Rundbrief 37(2), 60.
Ahnert, P., Hoffmeister, C., Rohlfs, E., van de Voorde, A.: 1949, Veröff.
Sternw. Sonneberg, 1, Nr.3.
Hoffmeister, C.: 1934, Astron. Nachr., 251, 23.
Oosterhoff, P.Th.: 1960, Bull. Astron. Inst. Netherlands, 15, 199.