

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

Number 1430

Konkoly Observatory  
Budapest  
1978 May 30

THE PERIOD OF SX CASSIOPEIAE

The study of Koch (1972) led to the measurement of some 200 blue plates, in and near primary minimum of SX Cas, with the Cuffey astrophotometer. Koch's B magnitudes of comparison stars were used.

In an attempt to secure the greatest accuracy (in the times of minima) warranted by the observations, the photometric observations by Dugan (1933) and the photoelectric B and V observations in Koch's study, as well as the photographic observations made here, were reduced by the same method. From each observation on the steeper parts of the primary minima, a time of minimum was found by applying to the time of the observation a correction equal to the time difference between a point on the mean curve through normal points, at the magnitude of the observation, and the mid-minimum. Neither Dugan nor Koch published all of the minima that could be derived from their observations.

The first four minima in Table I were derived from Dugan's observations. The others are from the measures of Oklahoma plates. The weights,  $p$ , were assigned to accord, as nearly as feasible, with Dugan's weighting system, with weight 0.5 for a minimum from one observation. The elements

Hel. Pr. Min. =  $2433963.240 + 36^d.56717 \cdot E$   
are used for all E's and C's in their paper.

Table II lists the minima from the photoelectric observations in Koch's paper, as determined here. Since plots of the B and V observations showed that mid-minimum in B came earlier than in V, these are listed separately. The weighted means of the O-C's were for B,  $-0^d.09$ , and for V,  $-0^d.06$ . The weights (in column 3) apply to both the B and the V minima of the same date, except for the eighth date.

The first and third of the normal minima in Table III were computed from Dugan's Table I, with one by Safraniec in the third, taken from Koch's Table X. The second is from the four from Dugan's observations in Table I. The fourth and fifth embody the photographic minima in Table I, with one by Gunther, quoted by Koch, in the fourth. The last is the weighted means of all photoelectric minima in Table II and the one by Shao which is quoted by Koch.

The figure shows the mean O-C's, with error bars of lengths twice the means of the weighted residuals. The trend indicates that the period decreased from  $36^d.5679$  to about  $36^d.5666$  some time between 1930 and 1942. Careful timings of later minima are needed to confirm this change.

The eight photographic observations at epoch +57, near phase  $+0^d.033$ , were consistently above the mean curve by  $0^m.015$ , or early by  $0^d.10$ . If this minimum is assigned weight zero, the fifth normal in Table III is shifted to  $\overline{p(O-C)} = -0^d.015 \pm 0.027$ , with  $\Sigma p = 8$ . It is shown by an open circle in the figure.

Table I. Single v and pg minima.

0-2400000	E	p	O-C
22 627.44	-310	2	$+0^d.02$
23 358.78	-290	2	$+0.02$
23 724.46	-280	1	$+0.03$
25 918.54	-220	2	$+0.08$
30 635.70	-91	0.5	$+0.07$
31 403.56	-70	3	$+0.02$
32 500.61	-40	3	$+0.06$
33 158.78	-22	2	$+0.02$
33 195.33	-21	2	0.00
33 597.63	-10	1	$+0.06$
34 036.35	+2	0.5	$-0.02$
34 292.29	+9	1	$-0.05$
35 754.98	+49	2	$-0.05$
36 047.45	+57	3	$-0.12$
36 193.83	+61	2	$-0.01$
36 779.00	+77	0.5	$+0.09$
37 217.73	+89	2	$+0.01$

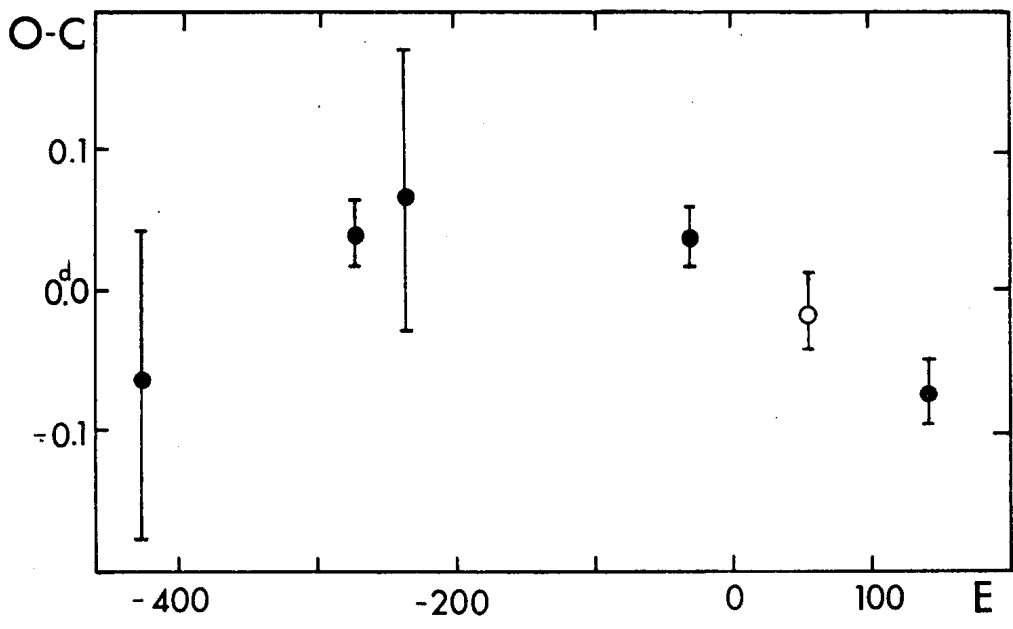


Table II. Single photoelectric minima.

0-2430000	E	p	$0_V-C$	$0_B-C$
8899.81	+135	0.5	-0.18	-0.23
8936.38	+136	0.5	-0.11	-.08
9009.51	+138	3	-0.03	-.08
9046.08	+139	0.5	-0.07	
9119.21	+141	1	-0.07	-.07
9155.78	+142	3	-0.03	-.10
9338.61	+147	0.5	-0.11	-.08
9411.75	+149	1,0.5	-0.09	-.17
9448.32	+150	3	-0.07	-.09
9484.88	+151	0.5	-0.02	+0.01

Table III. Normal minima.

$\overline{pE}$	$\Sigma p$	$\overline{p(0-C)}$
-428	22.5	-0.07 ± 0.11
-274	7	+0.04 0.024
-239	24	+0.07 0.10
-32	14.5	+0.034 0.019
+56	11	-0.043 0.047
+141	29	-0.075 0.023

B. S. WHITNEY  
 University of Oklahoma  
 Norman, Oklahoma

References:

- Koch, R. H. 1972, *Astron. J.* 77, 500.  
 Dugan, R. S. 1933, *Princeton Obs. Contr.* No. 13