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PERIOD AND PERIOD CHANGE OF THE ECLIPSING BINARY BV 549 SCORPII

The variability of BV 549=CoD $-34^{o}12293$($9\overset{m}{.}0$)=HD 163302 (A0) was discovered by Strohmeier, Knigge and Ott (1964). Later Bauernfeind (1968) determined its period from Harvard and Bamberg sky patrol plates to P=$1\overset{d}{.}888$ and derived a nearly sinusoidal curve for the O-C values as function of time with an amplitude of about 0.8 days, indicating a pronounced change of period.

With a larger number of plates taken at Boyden Observatory, South Africa, and Mount John Observatory, New Zealand, as well as photoelectric observations made in April and May 1975 with the ESO 50 cm photometric telescope in La Silla, Chile, the following elements could be derived:

$$\text{Minimum} = \text{JD } 241\,4862.585 + 3\overset{d}{.}776277\ E$$
$$\pm\ 0.012 \pm 0.000003 \text{ (m.e.)}.$$

The Table gives the Julian Date (JD) of the observed minima, the weight (G) of the observations, epoch (E), and the difference O-C between observed and calculated time of minimum in days. The last two points have been determined from photoelectric measurements; in both cases only opposite halves of the minimum have been covered.

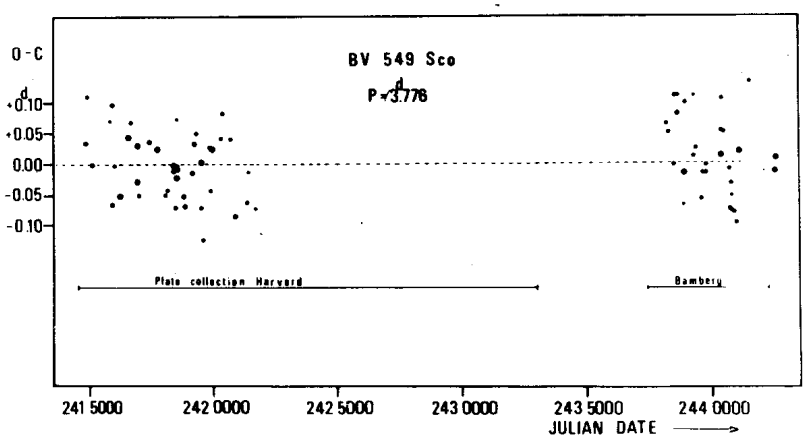
In the Figure the O-C values are given as function of Julian Date; their mean dispersion is about $\pm 0\overset{d}{.}06$. The size of the dots is a measure of the weight (scale 1 to 4) of the observed minima. The two solid lines indicate the time intervals covered by the Harvard and Bamberg plate collections. Between JD 242 2500 and 243 3000 no minima could be detected. The sine-shaped course found by Bauernfeind (1968) could not be confirmed. His period was incorrect by half a cycle of the period $3\overset{d}{.}776$ in about 25000 days.

BV 549 Sco = CoD-34°12293 (9.m0) = HD 163302 (A0)

Min = JD 241 4862.585 + 3.d776277 E
±.012 ±.000003 (m.e.)

Minima

JD	G	E	O - C	JD	G	E	O - C
2414862.622	3	.0	.037	2421427.627	1	1738.5	-.016
14898.571	2	9.5	.111	21867.503	1	1855.0	-.075
15198.671	3	89.0	-.003	38228.365	2	6187.5	.067
15872.810	1	267.5	.070	38264.224	2	6197.0	.051
15925.704	3	281.5	.098	38528.513	2	6267.0	.000
15940.646	3	285.5	-.065	38530.513	2	6267.5	.112
16010.569	2	304.0	-.004	38583.381	2	6281.5	.112
16208.776	4	356.5	-.052	38636.219	3	6295.5	.082
16582.724	4	455.5	.044	38917.454	3	6370.0	-.015
16650.720	2	473.5	.068	38934.396	1	6374.5	-.067
16933.843	4	548.5	-.029	38972.330	2	6384.5	.104
16935.791	4	549.0	.031	39289.447	2	6468.5	.014
17037.670	2	576.0	-.051	39291.433	1	6469.0	.113
17394.618	3	670.5	.039	39325.335	2	6478.0	.027
17728.804	4	759.0	.024	39683.999	2	6573.0	-.055
18098.805	2	857.0	-.049	39684.042	2	6573.0	-.012
18119.581	2	862.5	-.042	39702.922	2	6578.0	-.012
18427.378	3	944.0	-.012	39702.938	2	6578.0	.002
18436.830	4	946.5	-.001	40393.940	2	6761.0	-.054
18440.537	2	947.5	-.070	40394.010	4	6761.0	.017
18453.802	4	951.0	-.022	40412.820	2	6766.0	-.055
18457.676	1	952.0	.075	40412.983	2	6766.0	.107
18472.699	3	956.0	-.007	40711.127	2	6845.0	-.073
18506.687	3	965.0	-.005	40711.193	2	6845.0	-.007
18825.737	3	1049.5	-.051	40746.999	2	6854.5	-.076
18859.705	3	1058.5	-.069	40747.023	1	6854.5	-.053
19233.664	3	1157.5	.038	40763.992	2	6859.0	-.076
19250.603	3	1162.0	-.016	40764.039	2	6859.0	-.030
19303.537	2	1176.0	.050	41066.077	2	6939.0	-.094
19516.772	2	1232.5	-.073	41066.194	4	6939.0	.023
19518.738	4	1233.0	.004	41528.899	2	7061.5	.135
19550.708	2	1241.5	-.125	42538.909	4	7329.0	-.010
19888.835	2	1331.0	.026	42542.710	4	7330.0	.014
19922.754	2	1340.0	-.042				
19922.821	4	1340.0	.025				
20330.675	2	1448.0	.041				
20366.590	2	1457.5	.081				
20755.506	2	1560.5	.040				
20932.863	3	1607.5	-.087				
21391.707	2	1729.0	-.061				



The photoelectric measurements show a depth of primary minimum of about $0^m.6$. The light stays nearly constant during maximum; due to bad weather conditions, the secondary minimum could not be observed but the number of photographic secondary minima indicates about equal depth of both minima.

We are grateful to the European Southern Observatory for providing observing time to one of us (J.R.) at the 50 cm photoelectric telescope in Chile.

JÜRGEN RAHE
EBERHARD SCHÖFFEL
Remeis-Observatory Bamberg

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