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1992, 1993 BV PHOTOELECTRIC OBSERVATIONS OF CG Cyg

Photometric observations for this star have been reported previously by Zeilik et al. (1991), Dapergolas et al. (1992), Dapergolas et al. (1989a) and references therein.

The eclipsing binary CG Cyg was observed for the periods 19-27 July 1992, 29-30 September 1992, 15-22 July 1993 and 23-25 August 1993 with the 1.2m Kryonerion telescope and a single-channel photon counting photometer described by Dapergolas and Korakitis (1987). The photometer employs a high gain 9789QB phototube and conventional BV filters. Its output is fed directly to a microcomputer enabling rapid data access.

The data reduction method is the standard one and as a comparison star BD +34°4216 was used. The constancy of the comparison star was verified by Milone et al. (1979). The data presented here were obtained with an accuracy of ±0.015 mag.

Table 1 lists the dates of observations and phases covered whereas Figure 1, 2, 3 and 4 summarize the results for July 1992, September 1992, July 1993 and August 1993 respectively.

From the times of minima found here and those published by Milone et al. (1979) and Dapergolas et al. (1989a, 1989b, 1991, 1992) the O−C residuals show large variations which might be due to the continuous period variations of the system.

In Table 2 the times of minima and the O−C values are listed for the V and B bands respectively. Times of minima are calculated using the method described by Kwee and van Woerden (1956 whereas the O−C values were determined from the linear ephemeris $T=2439425^d1221+0^d631141\times E$ given by Milone and Ziebarth (1974).

Table 1

Date	Phase		Date	Phase	
19 July 1992	.80	.00	15 July 1993	.77	.20
20 July 1992	.37	.43	16 July 1993	.36	.79
	.54	.80	17 July 1993	.96	.37
21 July 1992	.95	.39	18 July 1993	.52	.94
24 July 1992	.73	.08	19 July 1993	.11	.54
25 July 1992	.31	.53	20 July 1993	.73	.13
27 July 1992	.47	.66	21 July 1993	.29	.70
29 Sep. 1992	.79	.16	22 July 1993	.93	.14
30 Sep. 1992	.35	.75	23 Aug. 1993	.57	.99
			24 Aug. 1993	.12	.58
			25 Aug. 1993	.75	.19

Table 2

Date	Type of minima	V colour Heliocentric Julian Day	O−C phase	B colour Heliocentric Julian Day	O−C Phase
21/7/1992	Primary	2448825.3666 ±0.0002	0.048	24448825.3669 ±0.0001	0.049
24/7/1992	Primary	2448828.5222 ±0.002	0.048	2448828.5223 ±0.0003	0.048
27/7/1992	Secondary	2448831.3629 ±0.0003	0.549	2448831.3632 ±0.0005	0.549
29/9/1992	Primary	2448895.4236 ±0.0001	0.049	2448895.4236 ±0.0001	0.049
30/9/1992	Secondary	2448896.3711 ±0.0002	0.550	2448896.3709 ±0.0003	0.550
15/7/1993	Primary	2449184.4875 ±0.0001	0.051	2449184.4873 ±0.0001	0.051
16/7/1993	Secondary	244185.4321 ±0.0001	0.548	2449185.4324 ±0.0002	0.548
17/7/1993	Primary	2449186.3808 ±0.0002	0.051	2449186.3808 ±0.0001	0.051
20/7/1993	Primary	2449189.5366 ±0.0001	0.051	2449189.5366 ±0.0001	0.051
22/7/1993	Primary	2449191.4298 ±0.0001	0.051	2449191.4299 ±0.0001	0.051
24/8/1993	Secondary	2449224.5631 ±0.0004	0.548	2449224.5631 ±0.0003	0.548
25/8/1993	Primary	2449225.5114 ±0.0001	0.051	2449225.5115 ±0.0001	0.051

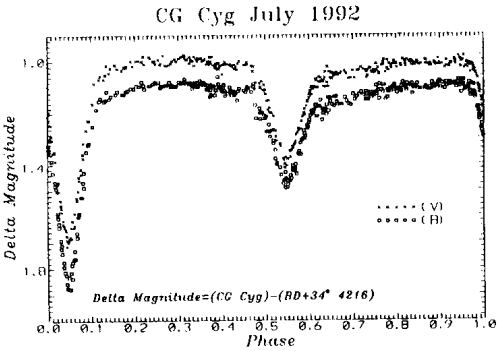

Figure 1.

From Figures 1, 2, 3 and 4 it can be seen that there are irregularities outside the eclipse already reported previously by Milone et al. (1979), Dapergolas et al. (1989b), Beckert et al. (1989), Dapergolas et al. (1991), Zeilik et al. (1991), Dapergolas et al. (1992) and Zeilik et al. (1994). From the Figures 1 and 2 it can be seen that there is a significant difference in the light curves outside the eclipses for the phases 0.6-0.95 whereas there is no difference for the phases 0.1-0.45 whereas from Figures 3 and 4 of the year 1993 it can be seen that there is no significant difference in the light curves.

The observed differences between the primary and secondary minima for the period 1987-1993 are shown in Table III (Dapergolas et al., 1988, 1989a, 1989b, 1991, 1992).

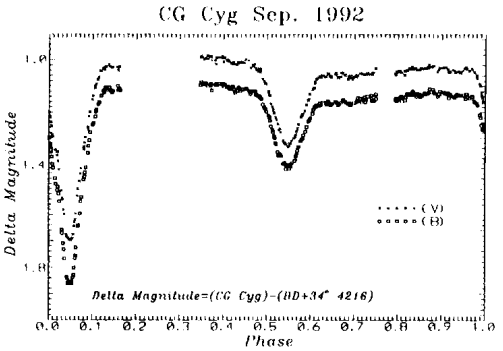

Figure 2

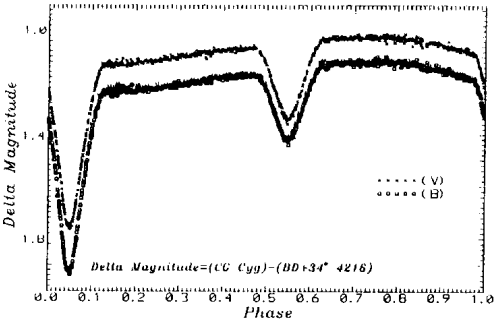

Figure 3

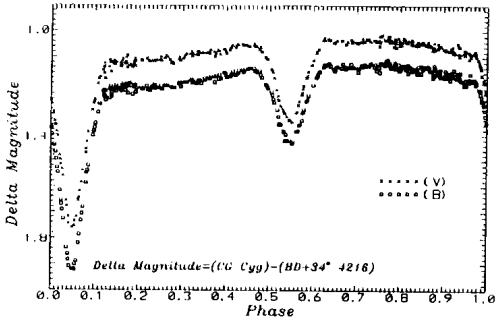

Figure 4

Table 3
Differences between primary and secondary minima for CG Cygni in B and V colours

Date	δB (mag)	δV (mag)
1987 July	0.41	0.30
1988 Sept.	0.34	0.30
1989 July	0.45	0.39
1990 July	0.48	0.37
1991 July	0.46	0.37
1992 July	0.38	0.30
1992 Sept.	0.43	0.36
1993 July	0.50	0.40
1993 Aug.	0.49	0.42

From the values of Table 3 it can be seen that there is a variation in the difference of both minima depths and for both colours probably due to the photospheric activity of the system.

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