GEOS RR 2

GEOS CIRCULAR ON RR LYR TYPE VARIABLES

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131 NEW MAXIMA OF THE LIGHT VARIATION OF DY HERCULIS

ABSTRACT - 131 times for maxima of DY Herculis are given, for the period 1975 to 1978. No change in the period given by HARDIE & LOTT (1961).

RIASSUNTO - Sono riportati 131 nuovi istanti di massimo di DY Herculis per il periodo 1975-1978. Non è stata riscontrata alcuna variazione del periodo dato da HARDIE e LOTT(1961).

RESUMEN - 131 nuevos instantes de los máximos de DY Herculis han sido obtenidos, en el periodo 1975 a 1978. Ninguna modificación del periodo publicado por HARDIE y LOTT (1961)ha sido encontrada.

RESUME - 131 nouveaux instants de maximums de DY Herculis sont donnés, pour la période 1975 à 1978. Aucune modification de la période publiée par HARDIE et LOTT (1961) n'a été trouvée.

1 . INTRODUCTION

The star DY Herculis was found to be variable by HOFFMEISTER in 1935. The elements given by the General Catalog of Variable Stars (KUKARKIN, 1969) were established by HARDIE and LOTT (1961) from 58 maxima published up to 1961. These elements are:

HJD 2 433 439.4871 + 0.14863127 E

Since this work, there has been an important lack of observation of DY Her. Recently GEYER and HOFMANN(1974) published one time of maximum and BREGER et al. (1978) confirmed the previous elements with their data. An attempt to determine the radius of DY Her from radial velocity observations was also made by McNAMARA (1978).

2 . GEOS OBSERVATIONS

DY Her has been observed by GEOS observers since 1975. Between 1975 and 1978, 2422 visual observations were made from which 131 times of maxima can be derived. Table 1 gives the number of maxima observed by each observer . The times of maxima are listed in table 2. The times of maxima are determined after applying the heliocentric correction (hereafter noted h.c.). The O-C's refer to the linear elements given by the General Catalog of Variable Stars (KUKARKIN, 1969). Using this list of maxima mean O-C's are given for each year (1975 to 1978): table 3, which also gives the number of maxima and the rms dispersion around the mean.

3 . PERIOD DISCUSSION

DY Her has only one known period. On the other hand, no long term variation of the period can be deduced from the data accumulated until now. Figure 1 plots the O-C's of published maxima of DY Her versus time. On this figure, 6 photoelectric times of maximum are derived from the individual photoelectric observations from BREGER et al. (1978). The error bars plotted together with GEOS data correspond to $\pm$ 1 rms(table 3).

REFERENCES

BREGER, M., CAMPOS, A.J., ROBY, S.C., 1978, P.A.S.P., 90,754. "The nature of dwarf cepheids. IV. DY Herculis".

GEYER, E.H., HOFFMANN, M., 1974, IBVS no 936.

HARDIE, R.H., LOTT, S.H., 1961, Ap.j.,133,71. "Three-color photometry of DY Herculis".

KUKARKIN, B.V., 1969, General Catalog of Variable Stars, third edition

Mc NAMARA, D.H., 1978, P.A.S.P.,90,759."The radial velocity and the radius of DY Her".

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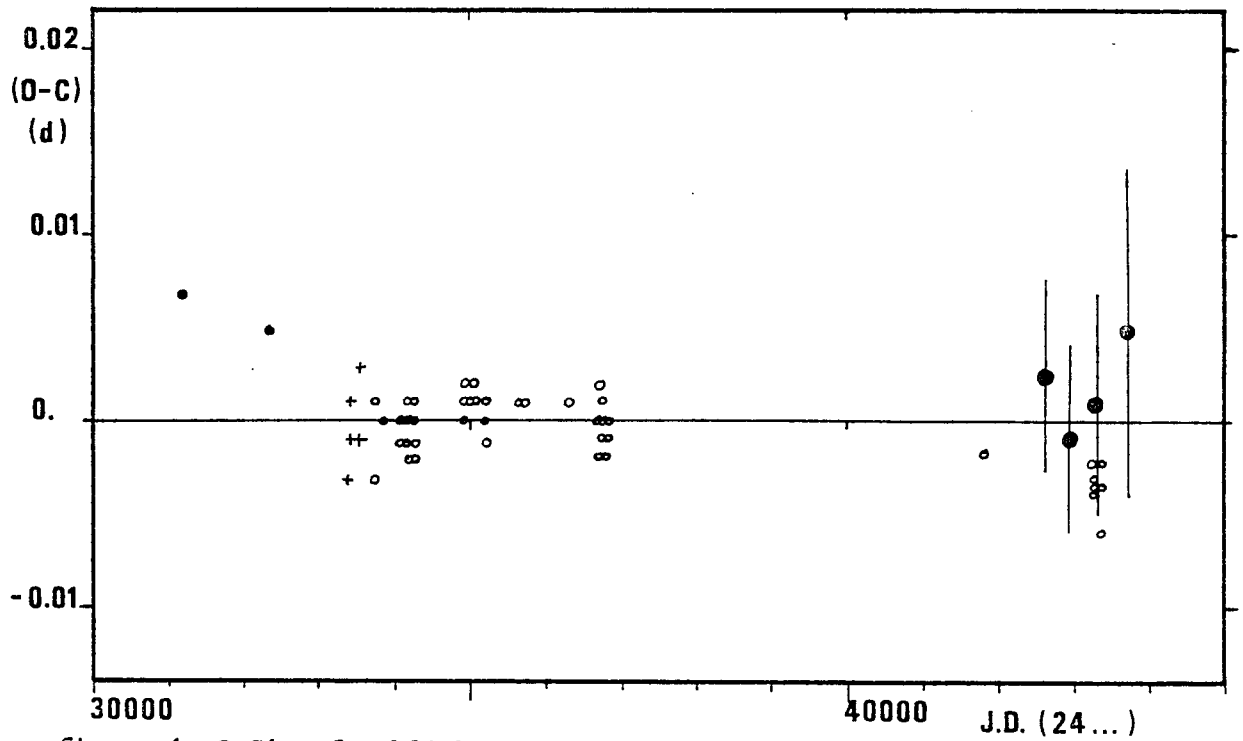

figure 1- O-C's of published DY Her light variation maxima. Filled circles: visual observations, open circles: photoelectric observations, crosses: photographic observations. Observation until JD 37000 are those published by HARDIE and LOTT (1961), The observation at JD 42000 is from GEYER and HOFFMANN (1974), between JD 43000 and 44000 photoelectric maxima are derived from BREGER et al.(1978). Circles with bars are GEOS Observations.

TABLE 1

Observer	Location	Identification	number of max.
P. BARUFFETTI	Massa,I	BFF	11
G.P.CANAZZA	Sandigliano,I	CNZ	3
T. COLOMBO	Ghezzano,I	CBO	1
A. FIGER	Paris,F	FGR	26
M. FRANGEUL	Angers,F	FRL	1
M. FULLE	Chiavari,I	FUL	7
A. GRYCAN	Toulouse,F	GRY	4
J.F. LEBORGNE	Brest,F	FLB	21
J.L. LESTRADE	Salles,F	LST	1
R. MAILLER	Pontailler,F	MLL	7
A. MAROT	Quimper,F	MAR	1
L. MAURIN	Arles,F	MRN	5
N. MAURON	St Remy de Pce,F	MAU	1
G. PACIFICO	Massa,I	PAC	3
M. PENNA	Asti,I	MPN	3
E. PORETTI	Arconate,I	POI	7
P. RALINCOURT	Nantes,F	RAL	15
A. ROYER	Epinac,F	ROY	11
T. VALTIER	Arles,F	VTR	3

TABLE 3

Year	$\overline{O-C}$ (day)	rms (day)	number of maxima
1975	0.0025	0.0051	49
1976	-0.0007	0.0049	22
1977	0.0006	0.0069	32
1978	0.0045	0.0089	28

date	UT	JD 244....	h.c. (day)	HJD 244....	O-C (day)	observer
2/ 5/75	22: 5	42535.4201	.0045	42535.4246	.0011	RAL
3/ 5/75	23: 0	42536.4583	.0045	42536.4629	-.0011	MRN
5/ 5/75	21:22	42538.3903	.0046	42538.3949	-.0013	RAL
10/ 5/75	22:58	42543.4569	.0047	42543.4617	.0120	FLB
17/ 5/75	22:23	42550.4326	.0048	42550.4375	.0022	BFF
20/ 5/75	21:59	42553.4160	.0049	42553.4208	.0129	FGR
21/ 5/75	22:39	42554.4437	.0049	42554.4486	.0003	FGR
31/ 5/75	21:39	42564.4021	.0049	42564.4069	.0003	FGR
2/ 6/75	23:38	42566.4847	.0048	42566.4896	.0021	MRN
2/ 6/75	23:35	42566.4826	.0048	42566.4875	-.0000	FLB
2/ 6/75	23:41	42566.4868	.0048	42566.4916	.0041	VTR
4/ 6/75	22: 0	42568.4167	.0048	42568.4215	.0018	RAL
4/ 6/75	21:54	42568.4125	.0048	42568.4173	-.0024	VTR
5/ 6/75	22:55	42569.4549	.0048	42569.4597	-.0005	MRN
7/ 6/75	21:19	42571.3882	.0048	42571.3930	.0006	PAC
7/ 6/75	21:21	42571.3896	.0048	42571.3944	.0020	BFF
7/ 6/75	21:22	42571.3903	.0048	42571.3950	.0027	MLL
8/ 6/75	1: 8	42571.5472	.0048	42571.5520	.0110	MLL
8/ 6/75	22:16	42572.4278	.0048	42572.4325	-.0002	RAL
12/ 6/75	22:50	42576.4514	.0047	42576.4561	.0103	FLB
15/ 6/75	22: 3	42579.4187	.0046	42579.4233	.0049	BFF
18/ 6/75	21:27	42582.3937	.0045	42582.3983	.0072	RAL
18/ 6/75	21:33	42582.3979	.0045	42582.4024	.0114	MRN
28/ 6/75	20:29	42592.3535	.0041	42592.3576	.0083	BFF
30/ 6/75	22:13	42594.4257	.0040	42594.4297	-.0005	VTR
30/ 6/75	22:17	42594.4285	.0040	42594.4325	.0023	MRN
30/ 6/75	22:21	42594.4312	.0040	42594.4353	.0051	PAC
30/ 6/75	22:32	42594.4389	.0040	42594.4429	.0127	BFF
4/ 7/75	22:43	42598.4465	.0038	42598.4504	.0071	BFF
8/ 7/75	23: 0	42602.4583	.0036	42602.4620	.0057	FUL
10/ 7/75	21:15	42604.3854	.0035	42604.3889	.0005	BFF
12/ 7/75	23:16	42606.4694	.0034	42606.4728	.0035	MAU
12/ 7/75	23:19	42606.4715	.0034	42606.4749	.0056	ROY
12/ 7/75	23:20	42606.4722	.0034	42606.4756	.0063	FUL
14/ 7/75	21:32	42608.3972	.0033	42608.4005	-.0010	BFF
14/ 7/75	21:37	42608.4007	.0033	42608.4040	.0025	FUL
15/ 7/75	22:22	42609.4319	.0032	42609.4352	-.0068	CBO
15/ 7/75	22:25	42609.4340	.0032	42609.4372	-.0047	BFF
15/ 7/75	22:42	42609.4458	.0032	42609.4490	.0071	PAC
26/ 7/75	22:27	42620.4354	.0025	42620.4379	-.0027	BFF
26/ 7/75	22:59	42620.4437	.0025	42620.4462	.0056	FUL
28/ 7/75	20:55	42622.3715	.0023	42622.3739	.0010	MPN
31/ 7/75	20:17	42625.3451	.0021	42625.3473	.0018	FUL
1/ 8/75	20:59	42626.3743	.0021	42626.3764	-.0095	FUL
1/ 8/75	21: 7	42626.3799	.0021	42626.3819	-.0040	RAL
6/ 8/75	22:27	42631.4354	.0017	42631.4371	-.0023	FUL
12/ 8/75	21: 4	42637.3778	.0012	42637.3790	-.0056	LST
25/ 8/75	23: 7	42650.4632	.0001	42650.4633	-.0008	MAR
30/ 8/75	20:58	42655.3736	-.0003	42655.3734	.0044	BFF
14/ 5/76	21:21	42913.3896	.0048	42913.3944	.0015	FGR
16/ 5/76	23: 1	42915.4590	.0048	42915.4639	-.0099	FGR
22/ 5/76	21:59	42921.4160	.0049	42921.4208	.0019	MLL
25/ 5/76	21:22	42924.3903	.0049	42924.3952	.0036	FGR
5/ 6/76	21:32	42935.3972	.0048	42935.4020	.0117	ROY
6/ 6/76	22:18	42936.4292	.0048	42936.4339	.0032	ROY
13/ 6/76	21:49	42943.4090	.0046	42943.4137	-.0027	FGR
14/ 6/76	22:43	42944.4465	.0046	42944.4511	-.0057	MLL
17/ 6/76	22: 4	42947.4194	.0045	42947.4240	-.0055	MLL
21/ 6/76	22:24	42951.4333	.0044	42951.4377	-.0048	MLL
22/ 6/76	23:27	42952.4771	.0043	42952.4814	-.0015	RAL
24/ 6/76	0:23	42953.5160	.0043	42953.5203	-.0031	RAL
25/ 6/76	22:47	42955.4493	.0042	42955.4535	-.0020	RAL
25/ 6/76	22:53	42955.4535	.0042	42955.4577	.0022	MLL
25/ 6/76	22:55	42955.4549	.0042	42955.4591	.0035	ROY
19/ 7/76	21:19	42979.3882	.0029	42979.3911	.0059	CNZ
21/ 7/76	22:57	42981.4562	.0028	42981.4590	-.0070	RAL
25/ 7/76	23:29	42985.4785	.0025	42985.4810	.0019	RAL
27/ 7/76	21:45	42987.4062	.0024	42987.4086	-.0026	RAL
3/ 8/76	21:25	42994.3924	.0018	42994.3942	-.0027	RAL
3/ 8/76	21:29	42994.3951	.0018	42994.3970	.0001	CNZ
24/ 8/76	20:23	43015.3493	.0002	43015.3495	-.0045	CNZ

Table 2 . Times of maxima of DY Herculis

date	UT	JD 244....	h.c. (day)	HJD 244....	O-C (day)	observer
27/ 2/77	1:40	43201.5694	.0004	43201.5698	-.0191	FGR
9/ 4/77	2:34	43242.6069	.0034	43242.6104	-.0008	FLB
9/ 4/77	2:35	43242.6076	.0034	43242.6111	-.0001	GRY
11/ 4/77	1: 1	43244.5424	.0035	43244.5459	.0026	GRY
11/ 4/77	1: 6	43244.5458	.0035	43244.5494	.0060	FLB
16/ 4/77	1:51	43249.5771	.0038	43249.5809	-.0159	FLB
21/ 4/77	0: 2	43254.5014	.0041	43254.5054	.0038	FLB
22/ 4/77	1: 8	43255.5472	.0041	43255.5513	.0093	GRY
23/ 4/77	1:48	43256.5750	.0042	43256.5792	-.0033	FLB
25/ 4/77	0:18	43258.5125	.0042	43258.5167	.0020	GRY
11/ 5/77	22:40	43275.4444	.0047	43275.4492	-.0095	FLB
28/ 5/77	21:24	43292.3917	.0049	43292.3965	-.0061	FGR
28/ 5/77	21:38	43292.4014	.0049	43292.4063	.0036	ROY
29/ 5/77	1: 6	43292.5458	.0049	43292.5507	-.0005	FGR
29/ 5/77	22:46	43293.4486	.0049	43293.4535	.0104	ROY
30/ 5/77	23:32	43294.4806	.0049	43294.4854	.0020	FGR
4/ 6/77	21:10	43299.3819	.0048	43299.3868	-.0015	ROY
5/ 6/77	21:56	43300.4139	.0048	43300.4187	-.0100	FLB
11/ 6/77	21: 1	43306.3757	.0047	43306.3804	.0064	ROY
16/ 6/77	22: 6	43311.4208	.0045	43311.4254	-.0020	ROY
16/ 6/77	22: 8	43311.4222	.0045	43311.4268	-.0007	MPN
17/ 6/77	23: 5	43312.4618	.0045	43312.4663	-.0015	ROY
19/ 6/77	21:41	43314.4035	.0045	43314.4079	.0079	MPN
2/ 7/77	23:29	43327.4785	.0039	43327.4824	.0028	ROY
25/ 7/77	20:58	43350.3736	.0025	43350.3761	.0073	RAL
30/ 8/77	20: 4	43386.3361	-.0003	43386.3358	-.0018	FGR
6/ 9/77	19:52	43393.3278	-.0009	43393.3269	.0037	FGR
10/ 9/77	20:10	43397.3403	-.0012	43397.3391	.0028	FGR
11/ 9/77	21:14	43398.3847	-.0013	43398.3835	.0067	FGR
13/ 9/77	19:32	43400.3139	-.0014	43400.3125	.0035	FGR
10/ 3/78	3: 0	43577.6250	.0013	43577.6263	.0002	POI
2/ 5/78	22: 6	43631.4208	.0045	43631.4253	-.0052	FGR
2/ 5/78	22:26	43631.4347	.0045	43631.4392	.0087	FLB
10/ 5/78	23:17	43639.4701	.0047	43639.4749	.0182	FLB
28/ 5/78	0:54	43656.5375	.0049	43656.5424	-.0069	FGR
31/ 5/78	22:12	43660.4250	.0049	43660.4299	.0162	FLB
1/ 6/78	22:38	43661.4431	.0048	43661.4479	-.0062	FLB
4/ 6/78	0:30	43663.5208	.0048	43663.5257	-.0092	FGR
4/ 6/78	22:27	43664.4354	.0048	43664.4402	.0135	POI
5/ 6/78	23:29	43665.4785	.0048	43665.4833	.0162	POI
8/ 6/78	22:46	43668.4486	.0047	43668.4534	.0136	POI
11/ 6/78	0:24	43670.5167	.0047	43670.5214	.0008	FGR
11/ 6/78	21:43	43671.4049	.0047	43671.4095	-.0028	FLB
25/ 6/78	21:18	43685.3875	.0042	43685.3917	.0080	POI
26/ 6/78	0:35	43685.5243	.0042	43685.5285	-.0038	RAL
29/ 6/78	21:42	43689.4042	.0041	43689.4082	.0115	POI
30/ 6/78	22: 9	43690.4229	.0040	43690.4269	-.0102	FGR
8/ 7/78	23:25	43698.4757	.0036	43698.4793	.0161	FLB
10/ 7/78	0:19	43699.5132	.0036	43699.5167	.0131	FLB
15/ 7/78	22:39	43705.4437	.0032	43705.4470	-.0020	FGR
24/ 7/78	21: 6	43714.3792	.0026	43714.3818	.0150	POI
26/ 7/78	22:30	43716.4375	.0025	43716.4400	-.0077	FRL
1/ 8/78	21:15	43722.3854	.0020	43722.3875	-.0054	FLB
4/ 8/78	21: 3	43725.3771	.0018	43725.3789	.0134	FLB
5/ 8/78	21:55	43726.4132	.0017	43726.4149	.0090	FLB
9/ 8/78	22: 2	43730.4181	.0014	43730.4195	.0005	FLB
22/ 8/78	20:32	43743.3556	.0004	43743.3559	.0060	FGR
26/ 8/78	20:51	43747.3688	.0001	43747.3688	.0059	FGR