

BBSAG Bulletin 9

1973 June 12

42nd List of Minima of Eclipsing Binaries

The following table lists 160 visual minima obtained during April and May 1973 by the observers

RD Roger Diethelm, Winterthur
 RG Robert Germann, Wald
 KL Kurt Locher, Grüt-Wtzikon
 TM Tony Mallama, Solon Ohio USA
 HP Hermann Peter, Otelfingen

The O-C values refer to the linear elements of the GCVS 1969, disregarding improved elements from the 1971 1st supplement to the GCVS. Reductions were made using the tracing paper method by each observer himself.

current no.	star	minimum order	JD hel 244...	O-C	observer	current no.	star	minimum order	JD hel 244...	O-C	observer
4798	S Ant	II	1777.350	-0.011	8 RG	4832		I	1789.497	-0.090	13 KL
4799		II	1777.381	+0.020	11 KL	4833		I	1815.409	-0.062	5 KL
4800		I	1789.377	+0.022	11 KL	4834		II	1815.542	-0.068	10 KL
4801	RY Aqr	I	1815.582	-0.070	10 KL	4835	ZZ Cep	I	1794.467	+0.002	12 HP
4801	OO Aql	I	1806.488	-0.036	8 RG	4836	EG Cep	I	1777.408	-0.031	10 HP
4802		I	1814.602	-0.030	7 KL	4837	EK Cep	I	1774.518	-0.001	10 KL
4803	WW Aur	II	1789.406	-0.013	18 KL	4838		I	1818.798	+0.001	18 TM
4804	SU Boo	I	1795.374	-0.029	8 RD	4839	RW Com	I	1774.504	-0.036	10 KL
4805	YY Boo	I	1806.410	-0.052	10 KL	4840		I	1792.776	-0.040	7 TM
4806	ZZ Boo	I	1815.524	-0.031	13 KL	4841		I	1793.725	-0.040	12 TM
4807	AD Boo	I	1794.399	+0.018	19 KL	4842		II	1794.321	-0.038	5 KL
4808		I	1794.411	+0.030	8 RG	4843		I	1823.390	-0.044	6 KL
4809		I	1795.459	+0.045	18 KL	4844		II	1828.500	-0.037	10 HP
4810		I	1824.387	+0.008	9 HP	4845		II	1830.382	-0.054	7 RG
4811	SV Cam	I	1777.352	-0.018	9 RG	4846		II	1834.666	-0.041	10 TM
4812		I	1777.360	-0.010	11 HP	4847	CC Com	I	1774.448	+0.080	6 KL
4813		I	1777.368	-0.002	7 RD	4848		I	1823.444	+0.086	8 KL
4814		I	1786.856	-0.003	15 TM	4849	U CrB	I	1786.778	-0.023	13 TM
4815		I	1787.446	-0.007	10 KL	4850		I	1793.715	+0.010	13 TM
4816		I	1806.420	-0.011	9 HP	4851	W Crv	II	1777.351	-0.012	10 KL
4817	TX Cnc	I	1795.405	+0.008	9 RD	4852		II	1778.515	-0.012	10 KL
4818	RS CVn	I	1806.400	-0.081	11 HP	4853		II	1794.418	-0.021	6 KL
4819		I	1806.414	-0.066	11 KL	4854		I	1795.402	-0.007	10 KL
4820	AG CMi	I	1776.330	-0.104	5 KL	4855		II	1796.367	-0.012	6 KL
4821		I	1786.310	-0.111	5 KL	4856		II	1806.460	-0.009	10 KL
4822	TY Cap	I	1815.591	-0.077	10 KL	4857		I	1823.353	+0.002	6 KL
4823	RZ Cas	I	1786.331	+0.002	12 KL	4858	V Crt	I	1795.392	+0.035	11 KL
4824		I	1787.526	+0.003	13 KL	4859	WW Cyg	I	1814.476	+0.018	14 HP
4825		I	1824.577	+0.001	17 KL	4860		I	1824.431	+0.020	13 HP
4826		I	1830.556	+0.003	12 HP	4861	KR Cyg	I	1823.403	-0.016	9 HP
4827	U Cep	I	1786.774	+0.029	13 TM	4862	V 548 Cyg	I	1815.424	-0.059	11 HP
4828		I	1821.678	+0.030	10 TM	4863		I	1815.428	-0.055	9 RG
4829	VW Cep	I	1774.491	-0.068	11 KL	4864	V 728 Cyg	I	1794.469	+0.037	15 HP
4830		II	1787.418	-0.082	12 KL	4865	RZ Dra	I	1786.754	-0.018	13 TM
4831		II	1789.776	-0.072	13 KL	4866		I	1815.404	-0.014	9 RG
						4867		I	1815.409	-0.008	10 HP

current no.	star	minimum or- JD hel der 244...	0 - C	n	ob- server	current no.	star	minimum or- JD hel der 244...	0 - C	n	ob- server
4869		I 1834.687	-0.011	8	TM	4912	UZ Lyr	I 1819.457	+0.001	16	HP
4870	TW Dra	I 1795.366	-0.038	8	RD	4913	EW Lyr	I 1828.481	+0.036	17	KL
4871	UZ Dra	II 1777.362	-0.013	13	HP	4914		I 1828.483	+0.039	19	HP
4872	AI Dra	I 1789.510	+0.002	23	KL	4915		I 1830.431	+0.038	7	KL
4873	S Equ	I 1830.497	+0.007	9	HP	4916	U Oph	I 1806.422	-0.016	11	HP
4874	YY Gem	I 1789.388	-0.005	8	RD	4917		I 1806.441	+0.003	5	RG
4875	GW Gem	I 1795.367	-0.019	8	RD	4918	WZ Oph	I 1819.460	+0.006	15	HP
4876	Z Her	I 1794.596	+0.007	11	KL	4919	V391 Oph	I 1803.535	-0.006	11	KL
4877		I 1806.561	-0.006	10	KL	4920	V508 Oph	II 1787.534	+0.003	7	KL
4878		I 1814.551	-0.002	10	KL	4921		II 1799.609	+0.011	8	KL
4879		I 1830.522	-0.002	11	KL	4922		II 1809.607	+0.010	8	KL
4880	SZ Her	I 1814.394	+0.016	11	HP	4923		II 1814.432	+0.008	13	HP
4881		I 1823.399	+0.021	11	HP	4924		I 1814.606	+0.009	10	KL
4882	TU Her	I 1794.509	-0.065	8	KL	4925		II 1824.432	+0.008	9	HP
4883		I 1803.583	-0.059	7	KL	4926		I 1824.598	+0.002	11	KL
4884		I 1828.521	-0.058	20	KL	4927		I 1829.429	+0.006	11	HP
4885		I 1828.522	-0.057	18	HP	4928		II 1829.596	+0.001	10	KL
4886	UX Her	I 1803.593	-0.045	12	KL	4929	V505 Sgr	I 1828.519	-0.030	21	KL
4887		I 1814.435	-0.044	14	HP	4930	AO Ser	I 1777.631	0.000	10	KL
4888	CC Her	I 1806.370	+0.041	11	HP	4931		I 1778.503	-0.008	10	KL
4889		I 1806.373	+0.045	6	KL	4932		I 1799.619	+0.004	7	KL
4890	CT Her	I 1824.447	+0.025	14	HP	4933		I 1815.441	-0.003	12	HP
4891	DH Her	I 1830.530	-0.047	5	KL	4934	TX UMa	I 1815.433	-0.013	8	RG
4892		I 1830.535	-0.041	14	HP	4935		I 1815.436	-0.010	10	HP
4893	FN Her	I 1819.431	+0.012	4	KL	4936	UX UMa	I 1778.470	+0.001	10	KL
4894	WY Hya	I 1795.356	+0.016	7	KL	4937		I 1794.400	0.000	6	KL
4895	DF Hya	I 1795.380	-0.040	8	RD	4938		I 1795.383	0.000	5	KL
4896	SW Lac	II 1824.577	-0.048	15	KL	4939		I 1796.367	+0.001	5	KL
4897	CM Lac	I 1829.590	-0.006	10	KL	4940		I 1806.399	+0.002	7	KL
4898	Y Leo	I 1794.474	+0.076	10	KL	4941		I 1808.364	+0.001	6	KL
4899		I 1794.475	+0.076	17	HP	4942		I 1829.407	0.000	7	KL
4900		I 1816.390	+0.073	16	RG	4943		I 1830.390	0.000	7	KL
4901		I 1816.391	+0.073	7	KL	4944	VV UMa	I 1786.619	+0.062	8	TM
4902	UU Leo	I 1794.412	-0.018	11	KL	4945	XZ UMa	I 1819.448	-0.055	12	KL
4903	UV Leo	I 1777.401	-0.003	13	HP	4946	XZ UMa	I 1830.448	-0.056	7	KL
4904		I 1787.402	-0.003	11	KL	4947	ZZ UMa	I 1828.375	-0.017	7	RG
4905	UZ Leo	II 1830.381	-0.098	6	RG	4948	W UMi	I 1786.634	+0.005	10	TM
4906	CE Leo	I 1777.444	+0.065	5	KL	4949	AH Vir	I 1777.402	-0.013	8	RD
4907		II 1778.511	+0.080	8	KL	4950	AZ Vir	II 1830.407	+0.021	6	RG
4908		II 1806.412	+0.066	7	RD	4951	BH Vir	I 1777.392	0.000	12	HP
4909	b Lib	I 1806.368	+0.044	10	KL	4952		I 1777.396	+0.005	12	KL
4910	TZ Lyr	I 1795.476	+0.014	11	KL	4953		I 1786.378	+0.001	10	KL
4911		I 1824.568	+0.021	11	KL	4954		I 1793.731	+0.002	13	TM
						4955		I 1795.371	+0.008	13	KL
						4956	DM Vir	I 1795.470	+0.002	11	KL
						4957	Z Vul	I 1830.487	+0.014	11	HP

The Totality Duration of TU Her

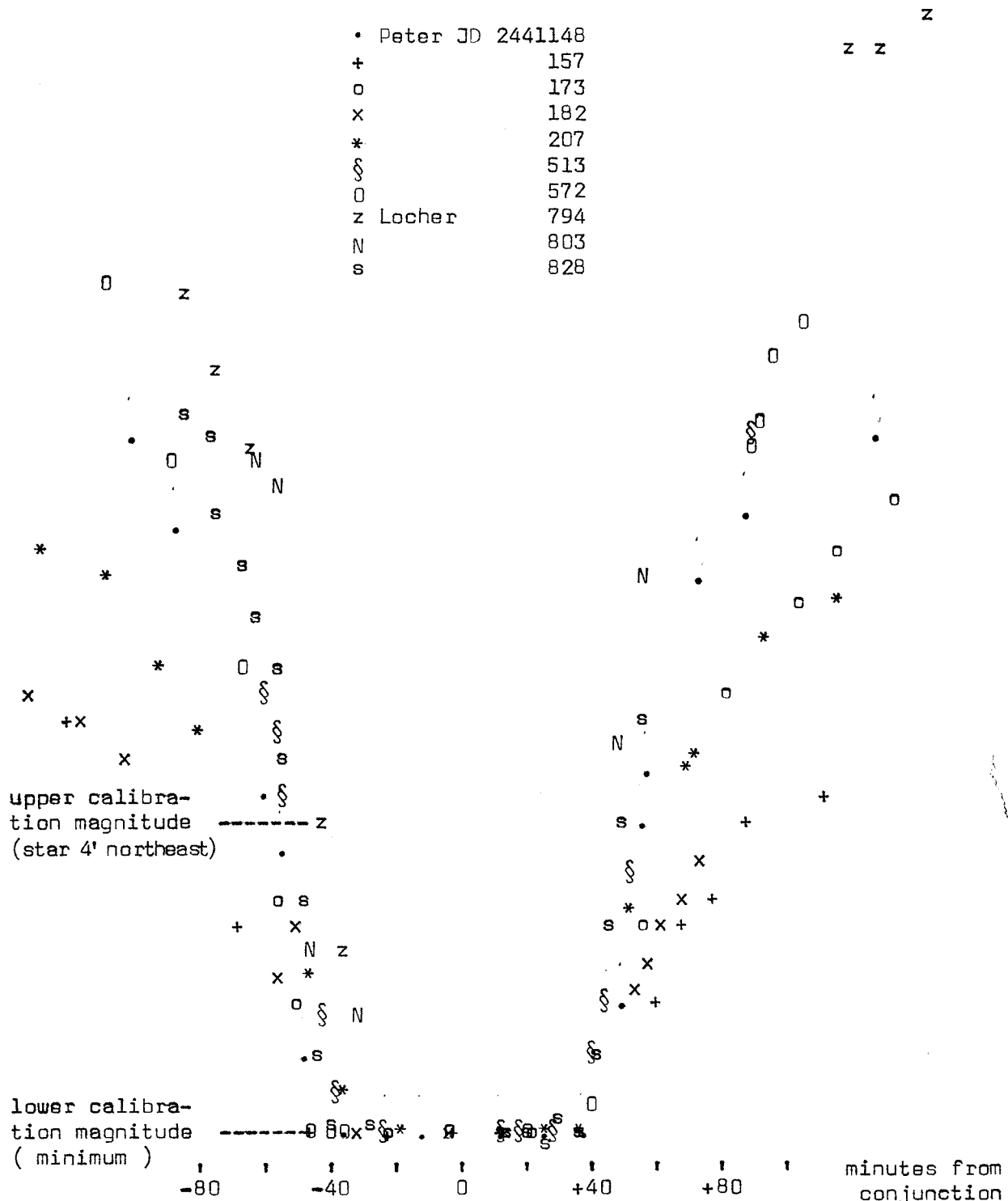
The "d" value for this EA type binary is given in the 1969 and 1971 issues of the GCVS as

0.017 period or 55 minutes .

By the subsequent superposition of our visual lightcurves we would like to show that more reasonable values are, respectively

(0.023 ± 0.001) period (76 ± 4) minutes .

H. Peter & K. Locher



The Period of RR Draconis

Observations of the eclipsing binary RR Dra by BBSAG members since 1966 indicate a substantial lengthening of its period compared to earlier years. From 19 minima (numbers 20 through 22 and 26 through 41 in table 11) I computed the following new, currently applicable elements, employing the common methods and weighting each minimum according to the number of single observations:

$$\begin{aligned} \text{JD min hel} &= 2433390.308 + 2.831308 \times E \\ &\pm \quad .036 \quad .000014 \end{aligned}$$

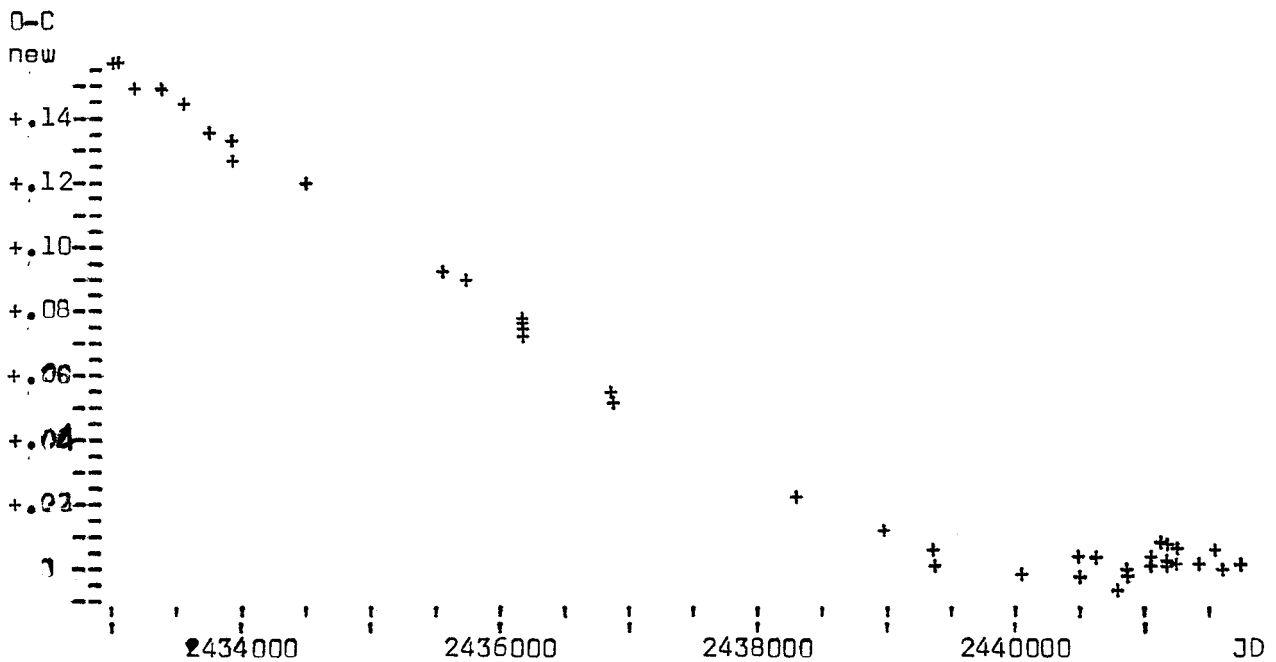
In order to discuss the variations of the period, I have listed all minima available to me in table 11 along with their $O-C_{\text{new}}$ values. RR Draconis underwent a probably gradual increase of its period between 1964 and 1968, as is clearly documented by the $O-C$ diagram (figure 12).

R. Diethelm

table 11

no.	O	$O-C_{\text{new}}$	observer	reference
1	2433005.408	+0.158	A. Szczepanovska	1
2	039.383	+0.157	"	1
3	172.446	+0.149	"	2
4	390.457	+0.149	"	2
5	557.499	+0.144	"	2
6	744.358	+0.136	"	2
7	928.383	+0.126	"	2
8	945.378	+0.134	"	2
9	2434480.482	+0.120	"	3
10	2435553.520	+0.093	"	4
11	720.564	+0.090	V. Tsesevitch	5
12	2436207.532	+0.073	R. Rudolf	6
13	207.534	+0.075	W. Quester	6
14	207.535	+0.076	A. Jahn	6
15	207.536	+0.077	W. Braune	6
16	847.387	+0.052	R. Rudolf	6
17	847.390	+0.055	W. Quester	6
18	2438288.493	+0.022	K. Kordilewski	7
19	2439027.454	+0.012	W. Braune	8
20	364.374	+0.006	H. Peter	9
21	381.358	+0.002	"	9
22	2440066.530	-0.002	"	10
23	485.570	+0.004	J. Šilhán	11
24	522.370	-0.003	R. Pollaczek	11
25	522.370	-0.003	J. Šilhán	11
26	590.328	+0.004	H. Peter	12
27	839.473	-0.006	"	13
28	856.465	-0.002	"	13
29	890.443	0.000	"	14
30	2441057.494	+0.004	"	15
31	091.468	+0.002	"	15
32	159.419	+0.002	R. Diethelm	16
33	159.425	+0.008	H. Peter	16
34	193.396	+0.003	"	17
35	210.388	+0.007	"	17
36	227.371	+0.002	"	17
37	261.350	+0.006	"	18
38	441.406	+0.002	"	19
39	561.469	+0.006	"	20
40	595.439	0.000	"	21

figure 12



References

- 1 Acta Astronomica Series C, vol. 4
- 2 5
- 3 6
- 4 9
- 5 Astronomitscheskij Tsirkuljar SSSR, nr. 174
- 6 Astronomische Nachrichten, nr. 286, p. 209
- 7 IBVS nr. 35
- 8 Astronomische Nachrichten, nr. 290, p. 105
- 9 Orion 100
- 10 109
- 11 Práce Lidové Hvězdárny a Planetária v Brně, nr. 9
- 12 Orion 118
- 13 121
- 14 122
- 15 125
- 16 126
- 17 129
- 18 BBSAG Bulletin 1
- 19 3
- 20 5
- 21 6
- 22 8

The Minimum Brightness of V 391 Oph

The magnitude at minimum of this EA type binary is given as $m_{pg} = 13.3$ by the 1969 and 1971 GCVS editions. When observing a minimum at JD 2441803, I got severe doubts concerning the correctness of this figure: Comparing to several surrounding visual AAVSO sequences (RU Oph, RY Oph, UZ Oph, V 759 Oph) I estimated $m_V = 14.4 \pm .3$, from which it may be expected $m_{pg} = 15$ or fainter, because a zero or negative colour index is extremely improbable with respect to the large amplitude, characteristic for low surface brightness of the secondary component.

K. Locher

