GEOS **GEOS CIRCULAR ON RR TYPE VARIABLE** **GEOS**
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LIST OF VISUAL MAXIMA OF RR LYRAE STARS

ABSTRACT

180 instants of maximum light have been determined for 78 RR Lyrae variable stars (65 RRab and 13 RRc) from visual estimates. They are listed with the O-C relative to the most probable cycle number.

RESUME

180 instants de maxima de 78 étoiles variables du type RR Lyrae (65 RRab et 13 RRc) ont été déterminés à partir d'estimations visuelles. Ils sont listés avec l'O-C relatif au numéro de cycle le plus vraisemblable.

RIASSUNTO

180 massimi di 78 stelle variabili del tipo RR Lyrae (65 RRab e 13 RRc) sono stati determinati sulla base di stime visuali. Questi instanti di massimo sono raccolti in una lista con l'O-C relativo al numero di ciclo piú probabile.

RESUMEN

180 instantes de máximos de 78 estrellas variables del tipo RR Lyrae (65 RRab y 13 RRc) han sido determinados a partir de estimaciones visuales. Aparecen listados con los O-C relativos al número de ciclo más probable.

OBSERVATIONS

Most of the observations cover a time interval going from August 2011 (JD 2455800) to November 2012 (JD 2456250). The observers are : Michel Dumont (DMT), Stéphane Ferrand (FND) and Jacqueline Vandenbroere (VBR).

OBS.	METHOD	N. MAX.	SITE	INSTRUMENTS
DMT	vis	17	Baîlleau l'Evêque, France	binoculars
FND	vis	59	Saint-Piat, France	T203-305 mm
VBR	vis	104	Heure (Belgium)	N3500 mm

The times were determined by the observers from their visual estimates (vis). The O-C are appearing in notes when new or better ephemerides were used and after correction by a non linear relation. The goal of the visual survey is to detect systematic trends in the O-C values with respect to current ephemerides, in order to check possible period variations (Le Borgne et al. 2007).
The O-C's curves published in Le Borgne et al. (2007) were examined to avoid any unlikelihood and the O-C relative to linear and non linear ephemerides of this paper were systematically noted LB 2007.

LIST

RRab	OBS.	MODE	HJD	ACC	E (G 85)	O-C (G 85)	NOTES
DU And	FND	vis	56178.491	0.008	33174	-0.156	
V548 And	VBR	vis	55886.310	0.01	8818	–0.208	
V548 And	VBR	vis	55887.292	0.01	8820	–0.240	
V548 And	VBR	vis	56158.501	0.015	9355	–0.270	
V548 And	VBR	vis	56162.515	0.01	9363	–0.312	
V550 And	VBR	vis	55886.269	0.015	5687	–0.115	
V550 And	VBR	vis	56142.518	0.015	6016	–0.124	

LIST

RRab	OBS.	MODE	HJD	ACC	E (G 85)	O-C (G 85)	NOTES
V569 And	VBR	vis	56190.580	0.01	8618	+0.024	
V569 And	VBR	vis	56211.593	0.01	8656	+0.027	
V672 Aql	VBR	vis	56228.254	0.015	34510	+0.255	
V672 Aql	VBR	vis	56229.274	0.015	34512	+0.216	
V706 Aql	VBR	vis	55479.313	0.01	75485	+0.147	
V706 Aql	VBR	vis	56108.571	0.015	77153	+0.170	
V706 Aql	VBR	vis	56229.283	0.01	77473	+0.166	
TU Ari	FND	vis	56178.491	0.008	41036	+0.030	
TU Ari	FND	vis	56186.516	0.015	41053	+0.037	
TU Ari	FND	vis	56212.425	0.015	41108	+0.005	
RS Boo	DMT	vis	56061.441	0.006	37873	–0.007	–0.031 (with quadratic elements of LB 2007)
RS Boo	DMT	vis	56064.462	0.006	37881	–0.005	–0.029 idem
RS Boo	FND	vis	56064.462	0.013	37881	–0.005	–0.029 idem
RS Boo	FND	vis	56073.516	0.006	37905	–0.007	–0.031 idem
RS Boo	FND	vis	56075.399	0.006	37910	–0.011	–0.034 idem
RS Boo	FND	vis	56087.490	0.010	37942	+0.005	–0.019 idem
RS Boo	DMT	vis	56101.450	0.007	37979	+0.004	–0.020 idem
RS Boo	FND	vis	56129.362	0.008	38053	–0.007	–0.031 idem ; normal
RS Boo	DMT	vis	56135.414	0.004	38069	+0.007	–0.017 idem
RS Boo	DMT	vis	56186.340	0.004	38204	–0.008	–0.032 idem
CM Boo	FND	vis	56131.410	0.02	33214	-0.113	
RZ Cam	VBR	vis	55857.608	0.01	34215	+0.048	
RZ Cam	VBR	vis	56190.573	0.01	34908	+0.062	
EF Cnc	FND	vis	56010.416	0.02	13713	+0.111	eph. Pejcha, Sobotka, 2001
EF Cnc	FND	vis	56013.338	0.02	13723	+0.076	idem
EF Cnc	FND	vis	56015.389	0.015	13730	+0.057	idem
RR CVn	VBR	vis	56064.442	0.01	22187	+0.003	
RX CVn	VBR	vis	56072.424	0.015	30566	–0.042	–0.042 (with eph. LB 2007)
SW CVn	VBR	vis	56061.436	0.01	37371	+0.338	–0.025 (with quadratic elements of LB 2007)
V470 Cas	VBR	vis	56178.544	0.015	22849	–0.204	eph. IBVS 4332
V470 Cas	VBR	vis	56150.558	0.015	22817	–0.211	idem
V470 Cas	VBR	vis	56186.400	0.15	22858	–0.217	idem
V1041 Cas	VBR	vis	56142.517	0.01	8281	+0.075	
V1041 Cas	VBR	vis	56180.517	0.01	8348	+0.058	
V1109 Cas	VBR	vis	55879.248	0.015	10237	–0.042	
V1109 Cas	VBR	vis	56150.521	0.01	10859	–0.036	
V742 Cep	FND	vis	56176.517	0.007	10946	–0.133	
V742 Cep	FND	vis	56189.444	0.007	10976	–0.134	
GU Cet	VBR	vis	56157.581	0.01	9495	–0.008	
GU Cet	VBR	vis	56162.550	0.01	9506	–0.007	
V Com	VBR	vis	56064.467	0.01	32784	+0.053	
BN CrB	VBR	vis	56095.513	0.015	9291	+0.048	
BN CrB	VBR	vis	56115.485	0.01	9330	+0.054	
DM Cyg	FND	vis	56101.544	0.005	32199	+0.066	–0.018 (with quadratic elements of LB 2007)
V357 Cyg	VBR	vis	56180.485	0.015	51312	+0.184	

RRab	OBS.	MODE	HJD	ACCUR	E (GC 85)	O-C (G 85)	NOTES
V357 Cyg	VBR	vis	56190.386	0.01	51331	+0.203	
V759 Cyg	VBR	vis	56108.485	0.01	51620	+0.058	
V759 Cyg	VBR	vis	56140.525	0.01	51709	+0.053	
V802 Cyg	VBR	vis	56150.507	0.01	19676	–0.014	
V802 Cyg	VBR	vis	56131.442	0.01	19644	–0.023	
V1949 Cyg	VBR	vis	55335.479	0.015	36945	+0.009	eph. MVS,11, H7, 150, 1988
V1949 Cyg	VBR	vis	56140.528	0.01	38558	+0.011	idem
V1949 Cyg	VBR	vis	56149.529	0.01	38576	+0.028	idem
V1962 Cyg	VBR	vis	55481.412	0.015	20899	+0.083	eph. Bezjaev & Shugarov, 1988
V1962 Cyg	VBR	vis	55729.470	0.015	21387	+0.070	
V1962 Cyg	VBR	vis	56157.505	0.015	22229	+0.081	
SX Del	VBR	vis	56188.355	0.01	7780	–0.014	eph. Paschke, 2006
CK Del	VBR	vis	56149.481	0.01	48671	+0.086	
CK Del	VBR	vis	56176.481	0.01	48732	+0.076	
DX Del	FND	vis	56131.592	0.02	35471	+0.064	
DX Del	FND	vis	56132.527	0.01	35473	+0.054	
DX Del	FND	vis	56133.490	0.02	35475	+0.072	
AE Dra	VBR	vis	56115.466	0.01	40020	+0.021	
AE Dra	VBR	vis	56133.540	0.001	40050	+0.014	
AE Dra	VBR	vis	56142.595	0.01	40065	+0.029	
BK Dra	FND	vis	56215.471	0.013	51838	–0.155	
AF Her	VBR	vis	56150.411	0.015	45193	–0.104	
AF Her	VBR	vis	56179.394	0.015	45239	–0.117	
EP Her	VBR	vis	56180.334	0.01	66081	–0.078	
EP Her	VBR	vis	56229.292	0.01	66196	–0.078	
GY Her	VBR	vis	56225.265	0.01	37830	+0.106	
V486 Her	VBR	vis	55380.507	0.01	34540	+0.055	
V486 Her	VBR	vis	56078.440	0.01	35406	+0.051	
V486 Her	VBR	vis	56178.377	0.01	35530	+0.053	
V734 Her	VBR	vis	56186.396	0.01	25164	–0.025	
V734 Her	VBR	vis	56211.367	0.01	25207	–0.037	
V1131 Her	VBR	vis	56157.407	0.01	17372	+0.021	
V1131 Her	VBR	vis	56188.375	0.015	17487	–0.011	
V1131 Her	VBR	vis	56211.297	0.01	17572	–0.001	
CZ Lac	VBR	vis	56222.399	0.015	25553	–0.063	
CZ Lac	VBR	vis	56223.304	0.015	25555	–0.023	
CZ Lac	VBR	vis	56225.438	0.01	25560	–0.050	
PW Lac	VBR	vis	56190.339	0.01	36442	+0.189	
PW Lac	VBR	vis	56211.358	0.01	36483	+0.201	
ST Leo	FND	vis	56064.421	0.008	58875	–0.023	–0.018 (with eph. LB 2007)
ST Leo	FND	vis	56074.460	0.006	58896	–0.021	–0.006 idem
AA Leo	FND	vis	56064.393	0.01	27508	–0.083	–0.013 idem
RR Lyr	DMT	vis	56060.435	0.008	23176	–0.712	
RR Lyr	DMT	vis	56073.468	0.017	23199	-0.716	
RR Lyr	DMT	vis	56077.442	0.01	23206	–0.711	
RR Lyr	DMT	vis	56132.413	0.01	23303	–0.726	
RR Lyr	DMT	vis	56140.385	0.017	23317	–0.690	
RR Lyr	DMT	vis	56149.435	0.007	23333	–0.710	
RR Lyr	DMT	vis	56157.386	0.008	23347	–0.695	
RR Lyr	DMT	vis	56158.475	0.012	23349	–0.740	

RRab	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
RR Lyr	DMT	vis	56175.476	0.006	23379	–0.745	
RR Lyr	DMT	vis	56179.445	0.008	23386	–0.744	
RR Lyr	DMT	vis	56213.501	0.006	23446	–0.700	
FN Lyr	VBR	vis	56224.306	0.01	42463	+0.038	
FN Lyr	VBR	vis	56225.355	0.01	42465	+0.033	
KM Lyr	VBR	vis	56222.270	0.015	39786	+0.182	
KM Lyr	VBR	vis	56224.273	0.015	39790	+0.185	
KX Lyr	VBR	vis	56224.296	0.01	37635	–0.013	–0.005 (with eph. LB 2007)
KX Lyr	VBR	vis	56228.263	0.01	37644	–0.014	–0.006 idem
V408 Oph	VBR	vis	56133.480	0.01	11023	–0.095	eph. Wils et al., 2006
V452 Oph	VBR	vis	56072.546	0.01	34846	–0.007	
V822 Oph	VBR	vis	56073.470	0.01	35975	+0.040	
V1640 Ori	VBR	vis	56248.545	0.015	20475	+0.179	
V1640 Ori	VBR	vis	56273.453	0.015	20585	+0.194	
AV Peg	FND	vis	56157.541	0.013	31680	+0.155	+0.009 (with quadratic elements of LB 2007)
ET Peg	VBR	vis	56132.475	0.01	34964	–0.054	
GV Peg	VBR	vis	56178.548	0.01	19863	+0.213	
GV Peg	VBR	vis	56186.477	0.01	19877	+0.205	
V378 Per	FND	vis	56269.314	0.004	72409	+0.097	
RY Psc	VBR	vis	56157.608	0.01	25440	+0.623	+0.063 (with quadratic elements of LB 2007)
CS Ser	VBR	vis	55711.429	0.015	46574	+0.007	
CS Ser	VBR	vis	56076.522	0.015	47267	+0.030	
DF Ser	VBR	vis	56060.543	0.01	60198	+0.098	+0.010 (with eph. LB 2007)
UX Tri	VBR	vis	55886.300	0.01	10993	–0.002	eph. BAV 189, 1999
UX Tri	VBR	vis	56178.610	0.01	11619	+0.018	idem
UX Tri	VBR	vis	56179.544	0.01	11621	+0.019	idem
KT UMa	FND	vis	56058.454	0.02	11147	+0.031	eph. IBVS 4815
KT UMa	FND	vis	56073.541	0.015	11171	+0.063	idem
RX UMi	VBR	vis	55340.420	0.01	57465	–0.220	
RX UMi	VBR	vis	55775.376	0.015	58352	–0.286	
RX UMi	VBR	vis	56158.397	0.01	59133	–0.300	
AE Vir	VBR	vis	56014.510	0.015	43751	+0.113	
AE Vir	VBR	vis	56073.470	0.01	43844	+0.124	
AR Vir	VBR	vis	56060.478	0.01	22721	+0.095	
AR Vir	VBR	vis	56061.525	0.01	22723	+0.081	
BC Vir	VBR	vis	56060.466	0.01	64016	+0.205	
DO Vir	VBR	vis	56072.525	0.01	55346	+0.234	
RRc	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
CQ Boo	VBR	vis	56060.491	0.02	18135	–0.015	eph. A. Paschke, priv. comm..
LQ Cnc	FND	vis	56007.441	0.01	8541	–0.017	
LQ Cnc	FND	vis	56010.486	0.01	8550	–0.009	
RZ Cep	FND	vis	56123.564	0.017	43696	–0.123	
RZ Cep	FND	vis	56124.466	0.006	43699	–0.147	max 1
RZ Cep	FND	vis	56124.496	0.004	43699	–0.117	max 2
RZ Cep	DMT	vis	56188.412	0.007	43906	–0.099	
RV CrB	VBR	vis	56095.479	0.015	39718	+0.046	
RV CrB	VBR	vis	56101.441	0.015	39736	+0.040	
DD Dra	VBR	vis	56140.478	0.015	27042	+0.046	eph. IBVS 3213
DD Dra	VBR	vis	56142.435	0.015	27048	+0.042	idem

RRc	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
BX Leo	FND	vis	56055.377	0.02	48638	–0.128	normal
BX Leo	FND	vis	56060.434	0.015	48652	–0.151	
BX Leo	FND	vis	56064.442	0.015	48663	–0.134	
BX Leo	FND	vis	56072.421	0.02	48685	–0.138	
BX Leo	FND	vis	56076.377	0.02	48696	–0.174	normal
V1640 Ori	VBR	vis	56248.545	0.015	20475	+0.179	
V1640 Ori	VBR	vis	56273.453	0.015	20585	+0.194	
DH Peg	FND	vis	55893.329	0.02	44733	+0.011	
DH Peg	FND	vis	55896.425	0.02	44745	+0.041	
DH Peg	FND	vis	56149.643	0.015	45736	+0.048	
DH Peg	FND	vis	56150.390	0.01	45739	+0.029	
DH Peg	FND	vis	56158.572	0.01	45771	+0.034	
DH Peg	FND	vis	56161.623	0.015	45783	+0.019	
DH Peg	FND	vis	56173.432	0.03	45829	+0.075	
DH Peg	FND	vis	56175.451	0.015	45837	+0.050	
DH Peg	FND	vis	56188.483	0.02	45888	+0.051	
DH Peg	FND	vis	56189.466	0.015	45892	+0.012	
DH Peg	FND	vis	56200.458	0.03	45935	+0.017	
DH Peg	FND	vis	56206.360	0.008	45958	+0.042	
DH Peg	FND	vis	56240.334	0.03	46091	+0.033	
SS Psc	FND	vis	56157.565	0.03	128660	–0.157	normal
SS Psc	FND	vis	56186.643	0.03	128761	–0.146	normal
GQ Psc	FND	vis	56178.398	0.015	10639	+0.024	
GQ Psc	FND	vis	56186.547	0.015	10666	+0.017	
GQ Psc	FND	vis	56189.566	0.015	10676	+0.015	normal
GQ Psc	FND	vis	56190.474	0.01	10679	+0.017	
GQ Psc	FND	vis	56213.427	0.01	10755	+0.013	
YZ Tau	FND	vis	56162.585	0.015	88714	–0.031	
BU UMa	FND	vis	56071.551	0.03	65182	–0.017	normal
AU Vir	VBR	vis	56074.423	0.015	41602	+0.022	
AU Vir	VBR	vis	56075.441	0.015	41605	+0.011	

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ERRATUM

In GEOS Circular RR 49, the maximum of YZ Tau by FND has to be read HJD 55922.359 and not 55923.359