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

ABSTRACT

267 instants of maximum light have been determined for 121 RR Lyrae variable stars (110 RRab and 11 RRc) from ccd measurements or from visual estimates. They are listed with the O-C relative to the most probable cycle number.

RESUME

267 instants de maxima de 121 étoiles variables du type RR Lyrae (110 RRab et 11 RRc) ont été déterminés à partir de mesures ccd ou photographiques et d'estimations visuelles. Ils sont listés avec l'O-C relatif au numéro de cycle le plus vraisemblable.

RIASSUNTO

267 massimi di 121 stelle variabili del tipo RR Lyrae (110 RRab e 11 RRc) sono stati determinati sulla base di misure ccd o fotografiche e di stime visuali. Questi instanti di massimo sono raccolti in una lista con l'O-C relativo al numero di ciclo piú probabile.

RESUMEN

267 instantes de máximos de 121 estrellas variables del tipo RR Lyrae (110 RRab y 11 RRc) han sido determinados a partir de medidas ccd y fotográficas o 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 July 2010 (JD 2455400) to March 2012 (JD 2456000). The observers are : Laurent Corp (COR), Michel Dumont (DMT), Jean-François Le Borgne (FLB), Stéphane Ferrand (FND) and Jacqueline Vandenbroere (VBR).

OBS.	METHOD	N. MAX.	SITE	INSTRUMENTS
COR	ccd	5	Rodez, France	VTT fl 135 mm
DMT	vis	21	Baîlleau l'Evêque, France	binoculars
FLB	ccd	20	Escalquens, France	VTT fl 135 mm
FND	vis	20	France	T115-540, J40 mm
VBR	vis	201	Heure (Belgium)	N35cm

The times were determined by the observers from their ccd measurements (ccd) or 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 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	ACCUR	E (GC 85)	O-C (G 85)	NOTES
XY And	VBR	vis	55828.527	0.01	15506	+0.042	
XY And	VBR	vis	55836.483	0.01	15526	+0.023	
ZZ And	VBR	vis	55878.341	0.01	55993	+0.018	
DR And	VBR	vis	55832.473	0.01	33052	–0.022	
DR And	VBR	vis	55836.417	0.015	33059	–0.020	
GM And	VBR	vis	55835.380	0.015	42722	+0.033	
GM And	VBR	vis	55881.318	0.015	42787	+0.032	
OV And	FND	vis	55879.429	0.015	19370	+0.286	+0.034 (with eph LB 2007)
OV And	FND	vis	55881.340	0.015	19374	+0.315	+0.063 idem
OV And	FND	vis	55896.357	0.015	19406	+0.273	+0.021 idem
OV And	FND	vis	55929.246	0.015	19476	+0.223	–0.030 idem
V569 And	VBR	vis	55834.475	0.01	7974	–0.020	
V569 And	VBR	vis	55838.363	0.01	7981	–0.002	
FX Aqr	VBR	vis	55478.407	0.01	17417	+0.008	
FX Aqr	VBR	vis	55838.409	0.01	18029	+0.017	
FX Aqr	VBR	vis	55481.347	0.01	17422	+0.007	
FX Aqr	VBR	vis	55834.293	0.015	18022	+0.018	
FX Aqr	VBR	vis	55861.336	0.01	18068	+0.002	
FY Aqr	VBR	vis	55127.316	0.015	19544	–0.031	
FY Aqr	VBR	vis	55804.440	0.015	20885	–0.062	
FY Aqr	VBR	vis	55805.433	0.015	20887	–0.079	
GP Aqr	VBR	vis	55828.457	0.01	9425	–0.311	eph GEOS database
GP Aqr	VBR	vis	55833.301	0.015	9437	–0.330	idem
GW Aqr	VBR	vis	55838.355	0.015	19495	+0.063	
GW Aqr	VBR	vis	55858.319	0.01	19533	+0.039	
GY Aqr	VBR	vis	55810.422	0.01	22152	–0.008	
GY Aqr	VBR	vis	55834.340	0.01	22204	–0.010	
CH Aql	VBR	vis	55742.508	0.01	50598	+0.088	
CH Aql	VBR	vis	55774.422	0.015	50680	+0.089	
V 518 Aql	VBR	vis	55829.332	0.015	71111	+0.086	
V518 Aql	VBR	vis	55855.324	0.015	71175	+0.068	
V1704 Aql	VBR	vis	55775.481	0.01	6312	+0.139	
V1704 Aql	VBR	vis	55838.335	0.01	6434	+0.138	
X Ari	FLB	ccd	55938.377	0.002	28188	+0.399	+0.014 (with quadratic elements of LB 2007)
RW Ari	VBR	vis	55805.524	0.01	34987	–0.209	
RW Ari	VBR	vis	55832.456	0.01	35063	–0.206	
SY Ari	VBR	vis	55881.337	0.01	34898	–0.059	
SY Ari	VBR	vis	55882.475	0.01	34900	–0.055	
TU Ari	FND	vis	48981.461	0.01	25777	–0.009	
CD Ari	VBR	vis	55858.495	0.015	8891	+0.012	
CD Ari	VBR	vis	55882.467	0.01	8964	+0.019	
CI Ari	VBR	vis	55833.540	0.01	6459	–0.034	
CI Ari	VBR	vis	55834.464	0.01	6461	–0.021	
CI Ari	VBR	vis	55838.548	0.01	6470	–0.034	
RS Boo	DMT	vis	55672.417	0.006	36842	+0.005	–0.013 (with quadratic elements of LB 2007)
RS Boo	DMT	vis	55738.454	0.006	37017	+0.008	–0.011 idem
RS Boo	DMT	vis	55744.485	0.006	37033	+0.001	–0.017 idem

RRab	OBS.	MODE	HJD	ACCUR	E (GC 85)	O-C (G 85)	NOTES
RS Boo	COR	ccd	55744.488	0.002	37033	+0.004	–0.014 idem
RS Boo	DMT	vis	56007.485	0.007	37730	–0.004	–0.023 idem
UY Boo	VBR	vis	55686.390	0.01	21280	+0.896	
DG Boo	VBR	vis	55706.409	0.015	14385	–0.141	
DG Boo	VBR	vis	55711.437	0.01	14396	–0.156	
DG Boo	VBR	vis	55744.462	0.01	14468	–0.140	
TY Cam	VBR	vis	55185.322	0.01	40411	+0.033	
TY Cam	VBR	vis	55481.501	0.02	40853	+0.042	
TY Cam	VBR	vis	55834.619	0.01	41380	+0.034	
V394 Cam	VBR	vis	55858.494	0.01	1949	–0.011	EW star
V394 Cam	VBR	vis	55882.292	0.01	1984	–0.010	idem
TT Cnc	FLB	ccd	55889.532	0.003	28299	+0.110	–0.011 (with quadratic elements of LB 2007)
AQ Cnc	VBR	vis	56002.330	0.01	41933	–0.074	
AQ Cnc	VBR	vis	56014.392	0.01	41955	–0.080	
Z CVn	VBR	vis	55643.496	0.015	25560	+0.512	
SW CVn	VBR	vis	56034.483	0.01	37310	+0.326	–0.005 (with quadratic elements of LB 2007)
UZ CVn	VBR	vis	55609.602	0.01	41821	+0.243	
AP CVn	VBR	vis	55658.504	0.01	27210	–0.253	
AP CVn	VBR	vis	56019.386	0.015	27837	–0.251	
BN CVn	VBR	vis	56002.509	0.01	16608	+0.108	
BN CVn	VBR	vis	56015.479	0.015	16631	+0.114	
AL CMi	VBR	vis	55857.611	0.015	34986	+0.462	–0.023 (with eph LB 2007)
AL CMi	VBR	vis	56002.427	0.015	35249	+0.496	+0.008 idem
HU Cas	VBR	vis	55857.456	0.01	59336	–0.029	
HU Cas	VBR	vis	55865.268	0.01	59355	–0.038	
IU Cas	VBR	vis	55857.454	0.01	41745	+0.645	
IU Cas	VBR	vis	55861.336	0.01	41751	+0.631	
V363 Cas	VBR	vis	55430.459	0.015	35290	+0.636	short cepheïd (IBVS 5969)
V363 Cas	VBR	vis	55893.421	0.01	36137	+0.683	idem
V568 Cas	VBR	vis	55857.274	0.015	8525	–0.022	
V568 Cas	VBR	vis	55858.316	0.01	8527	–0.008	
V1045 Cas	VBR	vis	55880.366	0.01	9563	+0.066	
V1045 Cas	VBR	vis	55881.266	0.01	9565	+0.051	
S Com	FLB	ccd	56017.348	0.004	26190	–0.103	
V Com	VBR	vis	56002.531	0.01	32652	+0.044	
ST Com	VBR	vis	55623.484	0.015	27702	–0.043	–0.021 (with eph LB 2007)
ST Com	VBR	vis	56019.387	0.01	21363	–0.031	–0.010 idem
DL Com	VBR	vis	56002.508	0.01	34568	+0.114	
DL Com	VBR	vis	56034.467	0.01	34642	+0.097	
SZ CrB	VBR	vis	55689.459	0.01	43245	+0.393	
SZ CrB	VBR	vis	55707.418	0.01	43285	+0.408	
V894 Cyg	VBR	vis	55832.361	0.01	32963	+0.006	
V894 Cyg	VBR	vis	55836.371	0.01	32970	+0.016	
V2470Cyg	VBR	vis	55445.345	0.015	7052	–0.162	
V2470 Cyg	VBR	vis	55775.567	0.01	7654	–0.197	
AX Del	VBR	vis	55775.431	0.015	53166	–0.351	
AX Del	VBR	vis	55807.505	0.015	53223	–0.410	
AX Del	VBR	vis	55810.354	0.015	53228	–0.380	
DX Del	COR	ccd	55833.370	0.003	34840	+0.063	

RRab	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
SU Dra	FLB	ccd	55937.601	0.002	18224	+0.060	+0.018 (with quadratic elements of LB 2007)
SU Dra	FLB	ccd	56000.336	0.002	18319	+0.055	+0.013 idem
SW Dra	FLB	ccd	56010.413	0.002	52286	+0.063	
SW Dra	FLB	ccd	56014.404	0.003	52293	+0.067	
SW Dra	FLB	ccd	56018.382	0.003	52300	+0.057	
AV Dra	VBR	vis	55061.384	0.01	35504	+0.127	
AV Dra	VBR	vis	55066.376	0.01	35513	+0.119	
AV Dra	VBR	vis	55067.483	0.01	35515	+0.115	
BK Dra	FND	vis	47303.508	0.01	36786	–0.107	
BT Dra	VBR	vis	55688.508	0.01	42390	–0.018	+0.000 (with eph LB 2007)
CY Dra	VBR	vis	55321.524	0.015	3191	–0.016	
CY Dra	VBR	vis	55396.443	0.015	3331	+0.010	
CY Dra	VBR	vis	55832.421	0.015	4146	+0.004	
RT Equ	VBR	vis	55850.351	0.01	40168	+0.185	
BE Eri	VBR	vis	55601.315	0.015	7082	–0.029	
BE Eri	VBR	vis	55893.422	0.01	7586	–0.020	
RR Gem	FLB	ccd	55952.339	0.002	36736	–0.468	
BD Her	VBR	vis	55337.517	0.015	47920	–0.093	–0.157 (with eph LB 2007)
BD Her	VBR	vis	55391.542	0.015	48034	–0.093	–0.157 idem
BD Her	VBR	vis	55746.435	0.01	48783	–0.156	–0.221 idem
BD Her	VBR	vis	55820.333	0.015	49939	–0.187	–0.253 idem
BD Her	VBR	vis	55829.331	0.015	48958	–0.193	–0.259 idem
IP Her	VBR	vis	55461.300	0.015	63207	–0.169	
IP Her	VBR	vis	55745.480	0.01	63862	–0.165	
V392 Her	VBR	vis	55736.478	0.01	5108	–0.142	
V392 Her	VBR	vis	55744.420	0.01	5123	–0.146	
V534 Her	VBR	vis	55351.444	0.015	6246	+0.008	
V534 Her	VBR	vis	55396.441	0.015	5321	+0.019	
V534 Her	VBR	vis	55414.411	0.015	6351	–0.006	
V534 Her	VBR	vis	55820.350	0.015	7028	–0.145	
V534 Her	VBR	vis	55829.327	0.015	7043	–0.165	
V534 Her	VBR	vis	55832.295	0.015	7048	–0.196	
UU Hya	VBR	vis	56003.349	0.015	31543	+0.034	
UU Hya	VBR	vis	56014.338	0.01	31564	+0.022	
ET Hya	VBR	vis	55623.355	0.01	28740	+0.153	
GL Hya	FND	vis	48981.678	0.01	45361	–0.222	
RR Leo	FLB	ccd	55942.624	0.0015	27956	+0.115	+0.006 (with quadratic elements of LB 2007)
RR Leo	FLB	ccd	55997.367	0.002	28077	+0.118	+0.008 idem
RR Leo	FLB	ccd	56002.345	0.002	28088	+0.120	+0.010 idem
RR Leo	FLB	ccd	56011.392	0.002	28108	+0.119	+0.009 idem
RX Leo	VBR	vis	56013.391	0.015	30160	+0.096	+0.002 (with eph LB 2007)
SS Leo	VBR	vis	55623.540	0.015	22100	–0.073	
SU Leo	VBR	vis	55649.369	0.01	66655	–0.093	
SU Leo	VBR	vis	56015.372	0.01	67430	–0.097	
SZ Leo	VBR	vis	55278.401	0.015	18370	+0.405	
WW Leo	VBR	vis	54199.392	0.015	32043	+0.027	+0.001 (with eph LB 2007)
WW Leo	VBR	vis	54202.423	0.015	32048	+0.044	+0.017 idem
WW Leo	VBR	vis	56013.364	0.015	35052	+0.037	+0.009 idem
AS Leo	VBR	vis	55627.447	0.01	55636	+0.057	

RRab	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
DL Leo	VBR	vis	56013.385	0.015	15244	+0.064	
DL Leo	VBR	vis	56015.404	0.01	15247	+0.062	
DM Leo	VBR	vis	55658.483	0.01	5527	–0.062	
VY LMi	VBR	vis	55658.481	0.015	7717	+0.058	
TV Lib	VBR	vis	55714.451	0.01	132396	+0.007	
RR Lyr	DMT	vis	55704.489	0.017	22548	–0.665	
RR Lyr	DMT	vis	55738.483	0.017	22608	–0.683	
RR Lyr	DMT	vis	55742.450	0.007	22615	–0.684	
RR Lyr	DMT	vis	55746.427	0.006	22622	–0.675	
RR Lyr	DMT	vis	55784.419	0.014	22689	–0.663	
RR Lyr	DMT	vis	55793.458	0.013	22705	–0.694	
RR Lyr	DMT	vis	55814.460	0.016	22742	–0.666	
RR Lyr	DMT	vis	55827.469	0.009	22765	–0.695	
RR Lyr	DMT	vis	55830.333	0.004	22770	–0.665	
RR Lyr	DMT	vis	55831.477	0.004	22772	–0.655	
RR Lyr	DMT	vis	55835.393	0.010	22779	–0.707	
RR Lyr	DMT	vis	55851.286	0.006	22807	–0.686	
RR Lyr	DMT	vis	55856.386	0.012	22816	–0.688	
RR Lyr	FND	vis	55856.394	0.015	22816	–0.680	
RR Lyr	DMT	vis	55881.357	0.005	22860	–0.659	
RR Lyr	DMT	vis	55906.265	0.014	22904	–0.693	
DD Lyr	VBR	vis	55805.459	0.015	75436	+0.248	
DD Lyr	VBR	vis	55820.357	0.01	75476	+0.241	
LX Lyr	VBR	vis	55729.466	0.01	35642	+0.002	+0.032 (with eph LB 2007)
LX Lyr	VBR	vis	55807.474	0.01	35785	+0.006	+0.036 idem
MW Lyr	VBR	vis	55495.328	0.01	48898	–0.189	
MW Lyr	VBR	vis	55714.485	0.01	49448	+0.151	
MW Lyr	VBR	vis	55833.402	0.01	49747	+0.111	
V784 Oph	VBR	vis	53918.539	0.01	4323	–0.009	new period and new eph : HJD 51310.2154 + 0.60336159
V784 Oph	VBR	vis	53932.421	0.01	4346	–0.004	idem
V784 Oph	VBR	vis	53990.338	0.01	4442	–0.010	idem
V784 Oph	VBR	vis	54300.469	0.01	4956	–0.006	idem
V784 Oph	VBR	vis	55059.477	0.015	6214	–0.027	idem
V784 Oph	VBR	vis	55067.356	0.01	6227	+0.008	idem
V784 Oph	VBR	vis	55351.526	0.01	6698	–0.005	idem
V784 Oph	VBR	vis	55400.407	0.01	6779	+0.004	idem
V784 Oph	VBR	vis	55707.557	0.02	7288	+0.042	idem
V784 Oph	VBR	vis	55736.460	0.015	7336	–0.016	idem
V784 Oph	VBR	vis	55739.491	0.01	7341	–0.002	idem
V785 Oph	VBR	vis	55660.600	0.01	42921	+0.012	
V785 Oph	VBR	vis	55687.564	0.01	42981	+0.014	
V822 Oph	VBR	vis	55745.491	0.01	35365	+0.045	
V868 Oph	VBR	vis	55715.443	0.015	11592	–0.080	
V868 Oph	VBR	vis	55742.432	0.015	11686	–0.105	
V868 Oph	VBR	vis	55746.441	0.01	11700	–0.119	
VV Peg	VBR	vis	55744.565	0.01	33488	–0.016	
VV Peg	VBR	vis	55835.416	0.01	33674	–0.005	
VZ Peg	VBR	vis	55067.577	0.01	54652	+0.111	
VZ Peg	VBR	vis	55833.494	0.015	57151	+0.105	
AO Peg	VBR	vis	55828.333	0.01	55394	+0.034	–0.004 (with eph. LB 2007)

RRab	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
AO Peg	VBR	vis	55829.444	0.01	55396	+0.051	+0.013 idem
AV Peg	COR	ccd	55773.396	0.003	30696	+0.138	+0.012 (with quadratic elements of LB 2007)
AV Peg	COR	ccd	55801.505	0.002	30768	+0.140	+0.013 idem
AV Peg	COR	ccd	55833.514	0.002	30850	+0.139	+0.011 idem
BH Peg	VBR	vis	55855.326	0.015	25726	–0.140	+0.003 idem
BT Peg	VBR	vis	55828.410	0.015	34792	+0.096	
BT Peg	VBR	vis	55857.346	0.01	34844	+0.081	
CS Peg	VBR	vis	55829.461	0.01	55028	+0.254	
CS Peg	VBR	vis	55837.355	0.015	55042	+0.244	
CV Peg	VBR	vis	55836.455	0.015	55237	–0.048	
CV Peg	VBR	vis	55866.270	0.01	55290	–0.065	
ET Peg	VBR	vis	55850.332	0.01	34388	–0.052	
GV Peg	VBR	vis	55855.397	0.015	19293	+0.208	
IY Peg	VBR	vis	55828.380	0.01	20173	–0.003	
IY Peg	VBR	vis	55835.471	0.01	20186	–0.008	
AR Per	FLB	ccd	55937.273	0.002	67443	+0.059	–0.003 (with quadratic elements of LB 2007)
AR Per	FLB	ccd	55942.383	0.002	67455	+0.063	+0.001 idem
AR Per	FLB	ccd	55951.318	0.002	67476	+0.061	–0.001 idem
V375 Per	VBR	vis	55857.477	0.01	50027	–0.296	
V375 Per	VBR	vis	55885.325	0.01	50078	–0.299	
BH Ser	VBR	vis	55705.440	0.01	32730	+0.104	
BH Ser	VBR	vis	55711.535	0.01	32744	+0.114	
DF Ser	VBR	vis	55744.461	0.01	59476	+0.104	+0.017 (with eph LB 2007)
RV Sex	VBR	vis	56014.482	0.01	52390	+0.055	
CV Tau	FND	vis	48981.572	0.01	973	+0.073	
BW Tri	VBR	vis	55834.621	0.01	19499	–0.017	
BW Tri	VBR	vis	55865.318	0.01	19637	–0.020	
BW Tri	VBR	vis	55881.316	0.015	19709	–0.039	
RV UMa	FLB	ccd	55996.414	0.002	23332	+0.127	
RV UMa	FLB	ccd	56019.345	0.002	23381	+0.123	
TU UMa	DMT	vis	55709.473	0.009	23093	–0.034	
TU UMa	FLB	ccd	55999.436	0.003	23613	–0.054	
TU UMa	FLB	ccd	56013.378	0.002	23638	–0.053	
TU UMa	DMT	vis	56028.459	0.014	23665	–0.029	
UU UMa	VBR	vis	55640.385	0.01	43529	+0.017	
UU UMa	VBR	vis	56003.425	0.01	44092	+0.029	
AV Vir	VBR	vis	55686.463	0.015	21641	+0.013	–0.005 (with eph LB 2007)
DO Vir	VBR	vis	55705.460	0.01	54657	+0.215	
FH Vul	VBR	vis	55774.459	0.01	48708	–0.119	
FH Vul	VBR	vis	55824.316	0.01	48831	–0.129	
RRc							
TY Ari	VBR	vis	55833.482	0.01	10784	+0.005	
TY Ari	VBR	vis	55834.476	0.01	10787	+0.010	
AE Boo	VBR	vis	55378.467	0.015	79361	+0.112	
AE Boo	VBR	vis	55686.425	0.015	80339	+0.106	
EF Cnc	VBR	vis	55627.327	0.015	12418	–0.061	
EF Cnc	VBR	vis	55660.443	0.01	12530	–0.063	
ST CVn	FND	vis	47302.495	0.01	21006	+0.109	
ST CVn	FND	vis	47303.449	0.01	21009	+0.076	

RRc	OBS.	MODE	HJD	ACCUR	E(GC 85)	O-C (G85)	NOTES
LW Her	VBR	vis	55340.574	0.015	76650	–0.040	
LW Her	VBR	vis	55739.518	0.015	77903	–0.001	
LW Her	VBR	vis	55746.518	0.015	77925	–0.005	
BX Leo	VBR	vis	55293.512	0.015	46536	+0.013	
BX Leo	VBR	vis	55649.475	0.015	47519	+0.010	
BX Leo	VBR	vis	55660.359	0.015	47549	+0.009	
BX Leo	VBR	vis	55661.460	0.015	47552	+0.022	
BX Leo	VBR	vis	55685.371	0.015	47618	–0.016	
EX Lyr	VBR	vis	55422.409	0.015	52870	+0.214	
EX Lyr	VBR	vis	55805.443	0.015	53938	+0.236	
EX Lyr	VBR	vis	55837.348	0.015	54027	+0.215	
V462 Lyr	VBR	vis	55490.320	0.02	41743	–0.002	
V462 Lyr	VBR	vis	55742.522	0.015	42420	+0.008	
V462 Lyr	VBR	vis	55745.503	0.02	42428	+0.010	
DH Peg	FND	vis	49617.464	0.01	20171	–0.007	
DH Peg	FND	vis	55878.270	0.01	44674	+0.027	
DH Peg	FND	vis	55879.297	0.02	44678	+0.032	
DH Peg	FND	vis	55881.331	0.01	44686	+0.022	
RU Psc	FND	vis	55881.497	0.02	40314	+0.113	
RU Psc	FND	vis	55896.329	0.03	40352	+0.111	
YZ Tau	FND	vis	48981.596	0.01	71262	+0.052	
YZ Tau	FND	vis	55923.359	0.01	88130	+0.044	
YZ Tau	FND	vis	55942.489	0.02	88179	+0.012	

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