GEOS
RR 16

GEOS CIRCULAR ON RR TYPE VARIABLES

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GEOS
Promenade Venezia, 3
F 78000 VERSAILLES

LIST OF VISUAL, PHOTOGRAPHIC AND CCD MAXIMA OF RR LYRAE STARS

ABSTRACT

189 instants of maximum light were determined for 39 RR Lyr variable stars from CCD measurements or from visual and photographic estimates. They are listed with the O-C relative to the most probable cycle number.

RESUME

189 instants de maxima de 39 étoiles variables du type RR Lyr ont été déterminés à partir de mesures CCD ou d'estimations visuelles et photographiques. Ils sont repris dans une liste avec l'O-C relatif au numéro de cycle le plus vraisemblable.

RIASSUNTO

189 massimi di 39 stelle variabili del tipo RR Lyr sono stati determinati sulla base di misure CCD o di stime visuali e fotografiche. Questi instanti di massimo sono raccolti in una lista con l'O-C relativo al numero di ciclo più probabile.

RESUMEN

189 instantes de máximos de 39 estrellas variables del tipo RR Lyr han sido determinados a partir de medidas CCD o de estimaciones visuales y fotográficas. Aparecen listados con los O-C relativos al número di ciclo más probable.

OBSERVATIONS

Most of the observations cover a time interval from 1997 (JD 2450500) to 1999 (JD 2454465) and were selected from lists issued by GEOS as Notes Circulaires. The timings of NSV 5028 UMa were used to establish the period of this new RRab star (IBVS 4815).

The observers are Jacques Aubaud (AUB), Roland Boninsegna (BNN), Andrea Manna (MAA), Massimiliano Martignoni (MRT), Bernard Paris (PAR), Jacqueline Vandenbroere (VBR) and Jean-Paul Verrot (VRR).

The instants of maximum were determined from direct visual estimates of the variable stars (vis), from visual estimates of photographic exposures (phot) or from CCD measurements without filter.

The O-C's were calculated from the GCVS 85 ephemerides whenever possible. They appear in notes when new or better ephemerides were used and after correction by non linear relations.

The cycle numbers were chosen using the most probable solution extending the GEOS RR 14 and 15 lists. The GEOS database (http://webast.ast.obs-mip.fr/people/leborgne/dbRR/index.htm) was examined to avoid any unlikelihood. No complete bibliography research was made for some of the stars, but I point out the Smith et al. (1999) paper on AR Her.

LIST

STARS	OBS.	MODE	JD HEL.	E (GC 85)	O-C (GC 85)	NOTES
SW And	MAA	vis	50783.454	73825	- 0.618	+0.052 (O-C with non linear term of GCVS 85 notes
CI And	VBR	vis	51021.541	31571	+0.045	
CI And	VBR	vis	51087.459	31707	+0.042	
BN Aqr	VBR	vis	51021.505	27998	- 0.073	
BN Aqr	VBR	vis	51464.392	28941	- 0.063	

STARS	OBS.	MODE	JD HEL.	E (GC 85)	O-C (GC 85)	NOTES
TZ Aur	VRR	vis	50835.337	78976	+0.011	
TZ Aur	VRR	vis	50837.289	78981	+0.004	
TZ Aur	VRR	vis	50846.294	79004	+0.001	
TZ Aur	VRR	vis	50857.264	79032	+0.004	
TZ Aur	VRR	vis	50862.370	79045	+0.018	
TZ Aur	VRR	vis	50864.317	79050	+0.006	
TZ Aur	VRR	vis	50871.366	79068	+0.005	
TZ Aur	VRR	vis	50891.341	79119	+0.004	
TZ Aur	VRR	vis	50893.301	79124	+0.007	
TZ Aur	VRR	vis	50900.352	79142	+0.007	
TZ Aur	VRR	vis	51166.299	79821	+0.007	
TZ Aur	VRR	vis	51285.369	80125	+0.008	
BH Aur	VBR	vis	51087.587	18277	- 0.008	
AH Cam	VRR	vis	50864.267	32909	+0.122	
AH Cam	VRR	vis	50871.321	32928	+0.170	
RW Cnc	VRR	vis	50858.312	20654	+0.150	
RW Cnc	VRR	vis	50864.340	20665	+0.159	
RW Cnc	VRR	vis	50875.293	20685	+0.167	
RW Cnc	VRR	vis	50893.359	20718	+0.176	
W CVn	AUB	phot	50516.467	52766	- 0.090	+0.012 (O-C with non linear term of the GCVS 85 notes
W CVn	AUB	phot	50543.480	52815	- 0.113	- 0.010 idem
UZ CVn	VRR	vis	50925.338	35108	+0.195	
UZ CVn	VBR	vis	50950.463	35144	+0.201	
UZ CVn	VRR	vis	50955.359	35151	+0.212	
UZ CVn	VRR	vis	50957.440	35154	+0.199	
UZ CVn	VRR	vis	50985.388	35194	+0.236	
UZ CVn	VRR	vis	50994.413	35207	+0.190	
UZ CVn	VBR	vis	51285.413	35624	+0.215	
BN CVn	VBR	vis	51348.484	8361	+0.025	
RZ Cep	AUB	phot	50344.385	24974	- 0.096	
UY Cyg	VBR	vis	51050.456	51037	+0.039	
UY Cyg	VBR	vis	51087.461	51103	+0.037	
XZ Cyg	AUB	phot	50638.557	13959	- 0.548	
DM Cyg	AUB	phot	50724.357	19392	+0.026	
V 894 Cyg	VBR	vis	51434.396	25266	+0.130	
BK Dra	AUB	phot	50720.372	42557	- 0.145	+0.000 (O-C with eph. NC 648
RR Gem	VBR	vis	50823.315	23826	- 0.213	
RR Gem	VBR	vis	50841.602	23872	- 0.202	
RR Gem	VBR	vis	50845.575	23882	- 0.201	
RR Gem	MAA	vis	51258.363	24921	- 0.219	
SZ Gem	MRT	CCD	50521.397	46549	- 0.033	
AR Her	AUB	phot	50555.530	19363	+0.031	+0.025 (O-C with eph. Smith et al, 1999) -
AR Her	VRR	vis	50572.394	19399	- 0.026	- 0.029 idem
AR Her	VRR	vis	50595.459	19448	+0.007	+0.006 idem
AR Her	VRR	vis	50603.471	19465	+0.029	+0.029 idem
AR Her	VRR	vis	50659.374	19584	- 0.002	+0.004 idem
AR Her	VRR	vis	50690.378	19650	- 0.019	- 0.011 idem
AR Her	VRR	vis	50692.336	19654	+0.059	+0.067 idem
AR Her	VRR	vis	50698.353	19667	- 0.034	- 0.025 idem
AR Her	VRR	vis	50716.293	19705	+0.044	+0.055 idem
AR Her	VRR	vis	50900.461	20097	- 0.039	- 0.009 idem
AR Her	VRR	vis	50954.494	20212	- 0.059	- 0.024 idem
AR Her	VRR	vis	50955.448	20214	- 0.045	- 0.010 idem
AR Her	VRR	vis	50963.436	20231	- 0.047	- 0.011 idem

STARS	OBS.	MODE	JD HEL.	E (GC 85)	O-C (GC 85)	NOTES
AR Her	VBR	vis	50987.415	20282	- 0.040	- 0.001 idem
AR Her	VBR	vis	51050.381	20416	- 0.058	- 0.013 idem
AR Her	VRR	vis	51051.339	20418	- 0.039	+0.006 idem
AR Her	VRR	vis	51052.342	20420	+0.023	+0.069 idem
AR Her	VRR	vis	51075.332	20469	- 0.018	+0.030 idem
AR Her	VRR	vis	51108.262	20539	+0.010	+0.061 idem
AR Her	VRR	vis	51285.398	20916	- 0.054	+0.015 idem
AR Her	VRR	vis	51332.407	21016	- 0.048	+0.025 idem
AR Her	VRR	vis	51340.383	21033	- 0.063	+0.012 idem
AR Her	VRR	vis	51346.498	21046	- 0.058	+0.017 idem
AR Her	BNN	vis	51346.523	21046	- 0.033	+0.042 idem
AR Her	VRR	vis	51347.449	21048	- 0.047	+0.028 idem
AR Her	VBR	vis	51355.453	21065	- 0.034	+0.042 idem
AR Her	VRR	vis	51372.382	21101	- 0.026	+0.053 idem
AR Her	VRR	vis	51420.331	21203	- 0.020	+0.063 idem
AR Her	VRR	vis	51426.397	21216	- 0.064	+0.020 idem
AR Her	VRR	vis	51434.362	21233	- 0.089	- 0.005 idem
AR Her	VRR	vis	51451.371	21269	- 0.002	- 0.085 idem
AR Her	VRR	vis	51452.307	21271	- 0 006	+0.081 idem
AR Her	VRR	vis	51459.299	21286	- 0.064	+0.023 idem
GY Her	VBR	vis	50628.543	27157	+0.106	+0.005 (O-C with eph. Schmidt, 1991)
GY Her	VBR	vis	50636.401	27172	+0.099	- 0.000 idem
V 394 Her	VRR	vis	50959.442	48645	- 0.070	
V 394 Her	VRR	vis	51341.421	49521	- 0.076	
V 394 Her	VRR	vis	51348.399	49537	- 0.075	
V 394 Her	VRR	vis	51375.425	49599	- 0.085	
V 394 Her	VRR	vis	51420.342	49702	- 0.082	
V 394 Her	VRR	vis	51430.362	49725	- 0.091	
V 394 Her	VRR	vis	51434.309	49734	- 0.069	
V 394 Her	VRR	vis	51451.296	49773	- 0.088	
GO Hya	VRR	vis	50894.357	39666	- 0.060	
RR Leo	AUB	phot	50541.396	16017	+0.011	
ST Leo	AUB	phot	50515.519	47266	- 0.005	
X LMi	VRR	vis	50862.293	17042	+0.117	
X LMi	VRR	vis	50864.332	17045	+0.103	
X LMi	VRR	vis	50875.305	17061	+0.126	
IO Lyr	VBR	vis	51016.503	19749	- 0.026	
IO Lyr	VBR	vis	51019.388	19754	- 0.026	
V 816 Oph	VBR	vis	51016.510	38522	- 0.053	
V 816 Oph	VBR	vis	51018.416	38527	- 0.051	
AO Peg	VBR	vis	51016.436	46601	+0.040	
AO Peg	VBR	vis	51376.525	47259	+0.044	
AV Peg	VRR	vis	51076.327	18664	+0.058	
AV Peg	VRR	vis	51135.275	18815	+0.059	
AV Peg	VRR	vis	51425.340	19558	+0.076	
AV Peg	VRR	vis	51432.356	19576	+0.065	
AV Peg	VRR	vis	51434.315	19581	+0.072	
BH Peg	VRR	vis	50790.245	17824	- 0.094	
BH Peg	VRR	vis	51429.365	18821	- 0.044	
BH Peg	VRR	vis	51438.342	18835	- 0.041	
BT Peg	VBR	vis	51014.538	26146	+0.063	
SS Tau	VRR	vis	50842.254	31923	- 0.048	
SS Tau	VRR	vis	50846.318	31934	- 0.054	
SS Tau	VRR	vis	50863.317	31980	- 0.070	
SS Tau	VRR	vis	51166.299	32799	- 0.036	
SS Tau	VRR	vis	51200.333	32891	- 0.034	

STARS	OBS.	MODE	JD HEL.	E (GC 85)	O-C (GC 85)	NOTES
U Tri	VBR	vis	49278.596	67475	- 0.028	
U Tri	VBR	vis	49279.504	67477	- 0.014	
U Tri	VBR	vis	51021.541	71372	- 0.028	
U Tri	VBR	vis	51105.622	71560	- 0.030	
U Tri	VBR	vis	51138.265	71633	- 0.037	
U Tri	VBR	vis	51140.519	71638	- 0.019	
U Tri	VRR	vis	51163.329	71689	- 0.019	
RV UMa	AUB	phot	50518.625	11629	+0.044	
RV UMa	AUB	phot	50544.379	11684	+0.055	
EX UMa	VBR	vis	50845.582	3376		- 0.007 (O-C with eph. GEOS Circular RR 13)
EX UMa	VBR	vis	50846.677	3378		+0.003 idem
NSV 5028 UMa	VBR	vis	49066.513	1		- 0.024 (O-C with eph. IBVS 4815)
NSV 5028 UMa	VBR	vis	49112.396	74		+0.066 idem
NSV 5028 UMa	VBR	vis	49360.635	470		- 0.106 idem
NSV 5028 UMa	VBR	vis	49465.446	637		- 0.054 idem
NSV 5028 UMa	VBR	vis	49475.570	653		+0.033 idem
NSV 5028 UMa	VBR	vis	49787.406	1150		+0.101 idem
NSV 5028 UMa	VBR	vis	49842.535	1238		+0.028 idem
NSV 5028 UMa	VBR	vis	50081.527	1619		+0.019 idem
NSV 5028 UMa	VRR	vis	50211.389	1826		+0.030 idem
NSV 5028 UMa	PAR	vis	50211.389	1826		+0.030 idem
NSV 5028 UMa	VRR	vis	50226.359	1850		- 0.056 idem
NSV 5028 UMa	VBR	vis	50431.554	2177		+0.012 idem
NSV 5028 UMa	PAR	vis	50480.411	2255		- 0.060 idem
NSV 5028 UMa	PAR	vis	50480.435	2255		- 0.036 idem
NSV 5028 UMa	PAR	vis	50487.340	2266		- 0.031 idem
NSV 5028 UMa	VRR	vis	50487.344	2266		- 0.027 idem
NSV 5028 UMa	VRR	vis	50489.268	2269		+0.015 idem
NSV 5028 UMa	PAR	vis	50489.298	2269		+0.045 idem
NSV 5028 UMa	PAR	vis	50507.364	2298		- 0.081 idem
NSV 5028 UMa	VRR	vis	50807.404	2298		- 0.041 idem
NSV 5028 UMa	VRR	vis	50511.330	2304		+0.121 idem
NSV 5028 UMa	VRR	vis	50514.333	2309		- 0.012 idem
NSV 5028 UMa	VRR	vis	50516.344	2312		+0.117 idem
NSV 5028 UMa	VBR	vis	50517.460	2314		- 0.022 idem
NSV 5028 UMa	PAR	vis	50519.333	2317		- 0.031 idem
NSV 5028 UMa	VRR	vis	50519.333	2317		- 0.031 idem
NSV 5028 UMa	VRR	vis	50546.335	2360		- 0.002 idem
NSV 5028 UMa	PAR	vis	50546.360	2360		+0.022 idem
NSV 5028 UMa	VBR	vis	50556.356	2376		- 0.018 idem
NSV 5028 UMa	VBR	vis	50559.484	2381		- 0.027 idem
NSV 5028 UMa	VBR	vis	50608.478	2459		-0.038 idem
NSV 5028 UMa	PAR	vis	50837.379	2824		- 0.025 idem
NSV 5028 UMa	VBR	vis	50845.546	2837		- 0.013 idem
NSV 5028 UMa	VBR	vis	50859.332	2859		- 0.028 idem
NSV 5028 UMa	VRR	vis	50859.346	2859		- 0.014 idem
NSV 5028 UMa	PAR	vis	50859.372	2859		+0.012 idem
NSV 5028 UMa	VBR	vis	50862.494	2864		- 0.002 idem
NSV 5028 UMa	PAR	vis	50864.373	2867		- 0.005 idem
NSV 5028 UMa	VRR	vis	50864.404	2867		+0.026 idem
NSV 5028 UMa	PAR	vis	50891.336	2910		- 0.016 idem
NSV 5028 UMa	VBR	vis	50892.591	2912		- 0.016 idem
NSV 5028 UMa	VBR	vis	50896.395	2918		+0.024 idem
NSV 5028 UMa	VBR	vis	50926.471	2966		- 0.010 idem
NSV 5028 UMa	VBR	vis	50926.471	2966		- 0.010 idem

STARS	OBS.	MODE	JD HEL.	E (GC 85)	O-C (GC 85)	NOTES
NSV 5028 UMa	PAR	vis	50928.391	2969		+0.028 idem
NSV 5028 UMa	VBR	vis	50948.421	3001		- 0.016 idem
NSV 5028 UMa	MAA	vis	50953.452	3009		- 0.003 idem
NSV 5028 UMa	VBR	vis	51190.580	3387		+0.006 idem
NSV 5028 UMa	VBR	CCD	51278.396	3527		- 0.000 idem
NSV 5028 UMa	PAR	vis	51285.362	3538		+0.065 idem
NSV 5028 UMa	VBR	vis	51352.403	3645		- 0.015 idem
NSV 5028 UMa	VBR	vis	51362.441	3661		- 0.013 idem
BC Vir	VBR	vis	50546.627	54249	- 0.019	
BC Vir	VBR	vis	50896.640	54869	- 0.005	
BN Vul	VBR	vis	50987.517	9185	+0.042	
BN Vul	VBR	vis	51050.498	9291	+0.046	
BN Vul	VRR	vis	51340.433	9779	+0.046	
BN Vul	VRR	vis	51346.406	9789	+0.077	
BN Vul	VRR	vis	51368.390	9826	+0.078	
BN Vul	VRR	vis	51431.352	9932	+0.063	
BN Vul	VRR	vis	51434.310	9937	+0.050	
FK Vul	VBR	vis	51016.549	34420	+0.025	
FK Vul	VBR	vis	51455.371	35431	+0.020	
FK Vul	VBR	vis	51465.364	35454	+0.029	

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