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CCD and DSLR maxima of RR Lyrae stars in 2016 and 2017

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We present here maximum timings of RR Lyrae stars observed in 2016 and 2017 by VSOLJ member Kenji Hirosawa. The calculation of the time of maximum from the measurements provided by the observer have been made in the frame of the GEOS RR Lyr survey. GEOS (European group for stellar observation, http://geos.upv.es/) is an association of amateur and professional astronomers, created in 1974, the aim of which is the promotion of research in astrophysics by amateur astronomers. A natural domain of research of the group is the study of variable stars. In this context, it appeared that the observation of the stars of RR Lyrae type is relatively neglected, in particular on long time scales. This is why GEOS decided about one decade ago to start a "RR Lyr Survey" (GRRS). It includes 3 main parts:
- A routine survey of bright RR Lyr stars, aiming in measuring times of maximum of RRab stars brighter than magnitude about 13 in order to monitor the variation of period on decade time scale. The time sampling is of the order of 10 maximums per year for each star. The observations are mainly done by professional robotic telescopes (25 cm TAROT telescopes, Klotz et al. (2009)), but also by amateur astronomers performing telescopes of 10 to 25cm diameter equipped with CCD or DSLR cameras (Le Borgne et al., 2007).
- Prospecting survey of under-studied RR Lyraes of magnitudes 13 to 15 using telescopes of 20 to 60 cm equipped with CCD cameras. For this part the aim is to check variation type, period and possible Blazhko effect.
- The follow-up of the RR Lyr it self in order to monitor the evolution of its Blazhko effect. Preston et al. (Preston et al, 1965) have shown that in years 1960's the Blazhko effect of RR Lyr have stopped and restarted again afterwards. This phenomenon was not studied in details because it requests continuous monitoring of the star. GRRS observers use dedicated small instruments (5cm photographic lens with CCD or DSLR) to follow RR Lyr since 2008. The time sampling of times of maximum measurements have allow to observe the disappearance of RR Lyr Blazhko effect in 2014 (Le Borgne et al., 2014) (Poretti et al., 2018). It restarted afterwards but with very small amplitude, and in 2018, the amplitude of the Blazhko effect is not still at the value it had at the beginning of the survey.
GRRS contributes to the "GEOS RR Lyr database" (http://rr-lyr.irap.omp.eu/dbrr/)

The O-C are computed using the elements from the General Catalogue of Variable Stars (Samus et al., 2017) by default. For the stars which have no elements in GCVS, the following table give the list of elements used.

Star	Origin	Period	reference
V1962 Cyg	2455729.470	0.508337	this paper
BN Eri	2457358.054	0.4876848	this paper
V552 Her	2457153.220	0.3785194	this paper
IY Peg	2450698.0011	0.54572621	Vandenbroere et al. (2014)
EX UMa	2455228.4423	0.5428328	this paper
ASAS J020058+1332.8	2457697.191	0.616166	this paper
NSV 1443	2457641.2922	0.6088106	this paper
NSV 3833	2457697.304	0.48724	this paper

The following tables contain the list of maximums observed by Kenji Hirosawa in 2016 and 2017.

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
SW And	2457974.1717	-0.0034	0.0029	9584	cG	126	Hsk	CANON X7
XX And	2458090.9066	-0.0005	0.0019	6127	V	125	Hsk	20cmL+ST402ME
ZZ And	2457671.1584	0.0214	0.0019	7835	V	138	Hsk	20cmL+ST402ME
BK And	2457641.2051	-0.0140	0.0011	16368	V	107	Hsk	20cmL+ST402ME
CI And	2457403.9242	-0.0172	0.0012	12300	V	173	Hsk	20cmL+ST402ME
CI And	2457697.1868	-0.0143	0.0019	12905	V	123	Hsk	13cmR+ST8XME
DE And	2457668.1732	0.0396	0.0020	21064	V	82	Hsk	25cmL+ST402ME
DR And	2458015.1054	-0.1185	0.0018	9580	V	132	Hsk	25cmL+ST402ME
DR And	2458091.1306	-0.1159	0.0023	9715	V	110	Hsk	25cmL+ST402ME
DY And	2458090.9979	-0.0865	0.0022	12327	V	113	Hsk	25cmL+ST402ME
OV And	2458091.0880	-0.0115	0.0020	10106	V	125	Hsk	13cmR+ST8XME
SW Aqr	2458051.9188	0.0356	0.0008	11224	V	148	Hsk	20cmL+ST402ME
SX Aqr	2458027.0644	-0.0061	0.0020	7736	V	144	Hsk	20cmL+ST402ME
SX Aqr	2458064.0283	-0.0061	0.0019	7805	V	94	Hsk	13cmR+ST8XME
TZ Aqr	2458063.9335	0.0393	0.0022	9001	V	115	Hsk	25cmL+ST402ME
AA Aqr	2458081.9010	-0.0443	0.0019	7394	V	109	Hsk	20cmL+ST402ME
BO Aqr	2458057.9124	0.0297	0.0036	7399	V	117	Hsk	20cmL+ST402ME
BR Aqr	2457974.1659	-0.0039	0.0015	12255	V	117	Hsk	20cmL+ST402ME
CP Aqr	2458022.0871	0.0054	0.0008	12791	V	141	Hsk	25cmL+ST402ME
FX Aqr	2458078.9239	-0.0170	0.0036	8203	V	115	Hsk	25cmL+ST402ME
HH Aqr	2457609.2566	-0.1069	0.0034	9957	V	178	Hsk	25cmL+ST402ME
V341 Aql	2458062.9419	0.0048	0.0020	5696	V	142	Hsk	25cmL+ST402ME
SY Ari	2458018.2760	-0.0287	0.0022	7819	V	116	Hsk	20cmL+ST402ME
SY Ari	2458110.0800	-0.0271	0.0022	7982	V	116	Hsk	20cmL+ST402ME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
TV Ari	2457974.2595	0.0227	0.0028	7990	V	125	Hsk	25cmL+ST402ME
CD Ari	2458082.0063	0.0691	0.0030	15664	V	114	Hsk	25cmL+ST402ME
CD Ari	2458109.9147	0.0735	0.0045	15749	V	135	Hsk	13cmR+ST8XME
CI Ari	2458025.2694	-0.0655	0.0011	11273	V	135	Hsk	20cmL+ST402ME
V575 Aur	2457668.1829	0.0257	0.0020	9394	V	93	Hsk	20cmL+ST402ME
RS Boo	2457418.3570	-0.0099	0.0013	23634	V	70	Hsk	13cmR+ST8XME
RS Boo	2457867.0109	-0.0121	0.0015	24822	cG	168	Hsk	CANON X4
ST Boo	2457421.3561	0.0918	0.0014	14336	V	141	Hsk	20cmL+ST402ME
ST Boo	2457762.3652	0.0882	0.0023	14884	V	93	Hsk	20cmL+ST402ME
SW Boo	2457418.3417	0.0261	0.0010	7551	V	84	Hsk	20cmL+ST402ME
TV Boo	2457421.1563	0.0053	0.0014	19556	V	206	Hsk	20cmL+ST402ME
TW Boo	2457743.3238	-0.0542	0.0015	11617	V	117	Hsk	25cmL+ST402ME
UU Boo	2457496.0048	0.0114	0.0010	6575	V	138	Hsk	25cmL+ST402ME
UU Boo	2457872.0662	0.0162	0.0015	7398	V	160	Hsk	13cmR+ST8XME
UY Boo	2457444.2964	-0.1488	0.0022	5944	V	118	Hsk	20cmL+ST402ME
UY Boo	2457463.1560	-0.1652	0.0015	5973	V	84	Hsk	13cmR+ST8XME
WW Boo	2457512.9777	-0.0285	0.0019	7544	V	101	Hsk	25cmL+ST402ME
CM Boo	2457872.1100	-0.0072	0.0025	6583	V	162	Hsk	25cmL+ST402ME
KR Boo	2457758.2836	0.0469	0.0015	9614	V	83	Hsk	20cmL+ST402ME
LW Boo	2457857.2507	0.0776	0.0037	6534	V	116	Hsk	20cmL+ST402ME
RZ Cam	2457434.9349	-0.0004	0.0023	6012	V	129	Hsk	25cmL+ST402ME
RZ Cam	2457671.3138	-0.0036	0.0040	6504	V	108	Hsk	25cmL+ST402ME
RZ Cam	2457752.9924	-0.0017	0.0016	6674	V	114	Hsk	20cmL+ST402ME
RZ Cam	2458082.0983	-0.0051	0.0015	7359	V	99	Hsk	20cmL+ST402ME
LP Cam	2457752.9004	0.1621	0.0032	6972	V	120	Hsk	20cmL+ST402ME
RW Cnc	2457750.3557	-0.0345	0.0020	11834	V	71	Hsk	20cmL+ST402ME
RW Cnc	2457753.0935	-0.0327	0.0015	11839	V	122	Hsk	13cmR+ST8XME
SS Cnc	2457421.0768	0.0145	0.0008	7969	V	139	Hsk	20cmL+ST402ME
AN Cnc	2457780.0839	0.0177	0.0027	7512	V	94	Hsk	20cmL+ST402ME
AQ Cnc	2457435.0496	0.0062	0.0014	7852	V	170	Hsk	25cmL+ST402ME
AS Cnc	2457404.0726	-0.0121	0.0023	7715	V	138	Hsk	25cmL+ST402ME
AS Cnc	2457815.9601	-0.0210	0.0014	8382	V	103	Hsk	25cmL+ST402ME
CQ Cnc	2457459.9624	-0.0090	0.0013	5553	V	120	Hsk	25cmL+ST402ME
CQ Cnc	2457780.0012	-0.0073	0.0022	6163	V	100	Hsk	25cmL+ST402ME
EZ Cnc	2457717.3087	0.0088	0.0013	7191	V	120	Hsk	20cmL+ST402ME
KV Cnc	2457422.0228	-0.0384	0.0032	9284	V	209	Hsk	25cmL+ST402ME
W CVn	2457422.2180	-0.0778	0.0017	11136	V	175	Hsk	13cmR+ST8XME
Z CVn	2457866.9877	-0.2069	0.0047	28960	V	147	Hsk	20cmL+ST402ME
RR CVn	2457476.0663	0.0260	0.0014	24714	V	130	Hsk	20cmL+ST402ME
RR CVn	2457872.1186	0.0255	0.0013	25423	V	161	Hsk	20cmL+ST402ME
RU CVn	2457496.0620	-0.0165	0.0020	5674	V	80	Hsk	13cmR+ST8XME
RX CVn	2457475.9710	0.0262	0.0025	10955	V	100	Hsk	20cmL+ST402ME
RZ CVn	2457495.9931	0.1960	0.0017	10906	V	150	Hsk	20cmL+ST402ME
SS CVn	2457450.1266	0.2321	0.0017	12783	V	153	Hsk	20cmL+ST402ME
SW CVn	2457444.3039	-0.1220	0.0015	40503	V	133	Hsk	25cmL+ST402ME
SZ CVn	2457450.0721	0.0011	0.0022	3959	V	157	Hsk	25cmL+ST402ME
X CMi	2457721.2960	0.0199	0.0024	8907	V	144	Hsk	20cmL+ST402ME
AA CMi	2457780.0618	0.1040	0.0019	44515	V	134	Hsk	13cmR+ST8XME
AL CMi	2457421.0788	0.0045	0.0019	4640	V	156	Hsk	25cmL+ST402ME
AL CMi	2457780.0145	0.0066	0.0022	5292	V	100	Hsk	20cmL+ST402ME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
DQ CMi	2457404.0815	0.0622	0.0033	7100	V	147	Hsk	20cmL+ST402ME
DQ CMi	2457676.2856	0.0694	0.0040	7542	V	152	Hsk	20cmL+ST402ME
HU Cas	2457421.9123	-0.0277	0.0017	14379	V	150	Hsk	20cmL+ST402ME
HU Cas	2457611.2418	-0.0315	0.0013	14839	V	133	Hsk	20cmL+ST402ME
HU Cas	2458063.9989	-0.0281	0.0015	15939	V	118	Hsk	25cmL+ST402ME
IU Cas	2457999.2396	0.0448	0.0021	12880	V	153	Hsk	20cmL+ST402ME
RZ Cep	2458026.9839	-0.0565	0.0050	49862	cG	182	Hsk	CANON X4
RZ Cep	2458051.9832	-0.0607	0.0023	49943	cG	181	Hsk	CANON X4
RZ Cep	2458056.9270	-0.0559	0.0040	49959	cG	159	Hsk	CANON X4
RZ Cep	2458081.9253	-0.0611	0.0015	50040	cG	153	Hsk	CANON X4
RZ Cep	2458110.0175	-0.0593	0.0023	50131	cG	170	Hsk	CANON X4
DX Cep	2457611.2386	0.0241	0.0019	36033	V	141	Hsk	25cmL+ST402ME
EL Cep	2458056.9177	0.0524	0.0020	52751	V	136	Hsk	25cmL+ST402ME
EL Cep	2458078.9966	0.0501	0.0019	52804	V	53	Hsk	20cmL+ST402ME
EL Cep	2458081.9146	0.0517	0.0016	52811	V	79	Hsk	25cmL+ST402ME
EZ Cep	2457403.9207	0.1059	0.0010	81194	V	188	Hsk	25cmL+ST402ME
RV Cet	2457686.0295	0.2443	0.0040	29791	V	160	Hsk	13cmR+ST8XME
RZ Cet	2457997.2849	-0.2218	0.0027	47180	V	121	Hsk	20cmL+ST402ME
HN Cet	2458079.0030	-0.0211	0.0021	13285	V	60	Hsk	25cmL+ST402ME
HN Cet	2458109.9960	-0.0272	0.0041	13352	V	115	Hsk	20cmL+ST402ME
S Com	2457463.2860	-0.1115	0.0012	28655	V	141	Hsk	20cmL+ST402ME
V Com	2457500.9914	0.0528	0.0032	35846	V	89	Hsk	25cmL+ST402ME
RY Com	2457460.0486	0.2259	0.0017	38087	V	244	Hsk	20cmL+ST402ME
ST Com	2457867.0694	-0.0440	0.0020	24448	V	108	Hsk	20cmL+ST402ME
TU Com	2457421.2036	-0.1129	0.0022	61642	V	179	Hsk	25cmL+ST402ME
RV CrB	2457513.0815	-0.1231	0.0016	43994	V	159	Hsk	13cmR+ST8XME
TV CrB	2457840.2905	0.0393	0.0017	44853	V	94	Hsk	20cmL+ST402ME
W Crt	2457500.9688	-0.0325	0.0011	43340	V	62	Hsk	20cmL+ST402ME
W Crt	2457757.2428	-0.0316	0.0010	43962	V	126	Hsk	13cmR+ST8XME
UY Cyg	2457513.1694	0.0692	0.0023	62563	V	129	Hsk	13cmR+ST8XME
UY Cyg	2458078.9248	0.0735	0.0018	63572	V	111	Hsk	20cmL+ST402ME
XZ Cyg	2457978.1435	0.1807	0.0016	29684	cG	137	Hsk	CANON X4
DM Cyg	2457955.2492	0.0892	0.0025	36614	V	86	Hsk	20cmL+ST402ME
V759 Cyg	2457688.9847	-0.0826	0.0020	56010	V	145	Hsk	20cmL+ST402ME
V759 Cyg	2458057.9959	-0.1276	0.0012	57035	V	107	Hsk	20cmL+ST402ME
V1962 Cyg	2457997.1764	0.0150	0.0036	4461	V	119	Hsk	25cmL+ST402ME
ZZ Del	2457589.2194	0.0085	0.0020	38253	V	179	Hsk	20cmL+ST402ME
AX Del	2458026.9376	0.1774	0.0031	57159	V	159	Hsk	20cmL+ST402ME
BV Del	2458022.0818	0.0229	0.0022	76738	V	146	Hsk	20cmL+ST402ME
CK Del	2458057.9078	0.0881	0.0010	52981	V	120	Hsk	25cmL+ST402ME
DX Del	2458014.9824	0.0767	0.0032	39456	cG	161	Hsk	DCANON X4
SU Dra	2457422.2325	0.0674	0.0023	20472	cG	161	Hsk	CANON KISS X3
SU Dra	2457871.9782	0.0670	0.0024	21153	cG	186	Hsk	CANON X4
SW Dra	2457449.9690	0.0635	0.0024	54813	V	136	Hsk	20cmL+ST402ME
XZ Dra	2457894.2219	-0.1371	0.0015	33507	cG	129	Hsk	CANON X4
BK Dra	2457863.2204	-0.1682	0.0010	54621	V	83	Hsk	13cmR+ST8XME
BT Dra	2457824.2126	-0.0225	0.0018	46018	V	132	Hsk	20cmL+ST402ME
RT Equ	2457953.2548	0.0873	0.0021	45150	V	116	Hsk	20cmL+ST402ME
RX Eri	2458021.2857	-0.0062	0.0036	61863	cG	111	Hsk	CANON X4
SV Eri	2457420.9897	0.3004	0.0041	30637	V	100	Hsk	13cmR+ST8XME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
SV Eri	2457760.0625	0.3199	0.0045	31111	V	125	Hsk	13cmR+ST8XME
BN Eri	2457421.9408	0.0001	0.0014	131	V	124	Hsk	25cmL+ST402ME
BN Eri	2458109.0885	-0.0001	0.0014	1540	V	130	Hsk	25cmL+ST402ME
LR Eri	2457420.9330	-0.1479	0.0034	6663	V	175	Hsk	25cmL+ST402ME
SZ Gem	2457743.2225	-0.0855	0.0011	60960	V	108	Hsk	25cmL+ST402ME
SZ Gem	2457758.2566	-0.0855	0.0012	60990	V	75	Hsk	13cmR+ST8XME
V426 Gem	2458021.2847	-0.0159	0.0025	12251	V	119	Hsk	20cmL+ST402ME
TW Her	2457463.2730	-0.0163	0.0011	89884	V	153	Hsk	25cmL+ST402ME
VZ Her	2457422.3021	0.0795	0.0012	46859	V	140	Hsk	25cmL+ST402ME
VZ Her	2458014.9888	0.0849	0.0009	48205	V	114	Hsk	20cmL+ST402ME
AF Her	2457891.9784	-0.1818	0.0031	47956	V	174	Hsk	20cmL+ST402ME
BD Her	2457513.1536	-0.1604	0.0016	52511	V	131	Hsk	20cmL+ST402ME
BD Her	2458021.9639	0.1484	0.0032	53584	V	171	Hsk	25cmL+ST402ME
DL Her	2457490.2241	0.0523	0.0032	32591	V	162	Hsk	20cmL+ST402ME
DL Her	2458014.9952	0.0495	0.0012	33478	V	106	Hsk	25cmL+ST402ME
EE Her	2457513.1701	0.1287	0.0023	58744	V	121	Hsk	25cmL+ST402ME
EP Her	2457490.2545	-0.1005	0.0020	69158	V	157	Hsk	25cmL+ST402ME
EP Her	2457542.1933	-0.0997	0.0020	69280	V	67	Hsk	13cmR+ST8XME
EP Her	2458021.9691	-0.1113	0.0023	70407	V	170	Hsk	20cmL+ST402ME
IP Her	2457921.2090	0.1920	0.0030	68876	V	134	Hsk	25cmL+ST402ME
V347 Her	2457978.1545	-0.1522	0.0013	40710	V	93	Hsk	20cmL+ST402ME
V394 Her	2457513.2632	-0.1894	0.0013	63675	V	118	Hsk	25cmL+ST402ME
V442 Her	2457508.2184	0.1685	0.0022	49261	V	132	Hsk	25cmL+ST402ME
V552 Her	2457508.2707	-0.0005	0.0009	938	V	96	Hsk	25cmL+ST402ME
V1318 Her	2457846.2509	-0.0329	0.0015	8170	V	149	Hsk	20cmL+ST402ME
SZ Hya	2457421.1619	-0.2671	0.0025	31163	V	136	Hsk	13cmR+ST8XME
UU Hya	2457435.0820	0.0347	0.0023	34276	V	137	Hsk	20cmL+ST402ME
UU Hya	2457757.2549	0.0286	0.0032	34891	V	114	Hsk	20cmL+ST402ME
XX Hya	2457422.0628	-0.0188	0.0014	34642	V	207	Hsk	20cmL+ST402ME
XX Hya	2457816.0766	-0.0324	0.0014	35418	V	141	Hsk	20cmL+ST402ME
GO Hya	2457435.0053	-0.0748	0.0079	49943	V	219	Hsk	13cmR+ST8XME
V496 Hya	2457460.1192	-0.0189	0.0025	7490	V	153	Hsk	25cmL+ST402ME
CQ Lac	2457997.2860	0.1988	0.0011	37031	V	91	Hsk	25cmL+ST402ME
RR Leo	2457421.0821	0.1517	0.0012	31224	V	123	Hsk	13cmR+ST8XME
RR Leo	2457743.1933	0.1589	0.0010	31936	V	125	Hsk	13cmR+ST8XME
SS Leo	2457867.0734	-0.1048	0.0014	25682	V	115	Hsk	13cmR+ST8XME
ST Leo	2457450.1023	-0.0178	0.0013	61774	V	154	Hsk	13cmR+ST8XME
TV Leo	2457476.0500	0.1265	0.0018	30369	V	160	Hsk	25cmL+ST402ME
TV Leo	2457722.3154	0.1279	0.0018	30736	V	162	Hsk	20cmL+ST402ME
WW Leo	2457422.2242	0.0484	0.0029	37389	V	176	Hsk	20cmL+ST402ME
AA Leo	2457816.0360	-0.1066	0.0014	30434	V	147	Hsk	25cmL+ST402ME
AE Leo	2457743.3117	0.1414	0.0022	60479	V	118	Hsk	20cmL+ST402ME
BO Leo	2457816.0542	0.0198	0.0022	35374	V	144	Hsk	13cmR+ST8XME
LL Leo	2457867.0934	-0.0958	0.0020	18933	V	105	Hsk	25cmL+ST402ME
MR Leo	2457408.3514	-0.0070	0.0017	6022	V	63	Hsk	20cmL+ST402ME
MR Leo	2457718.3422	0.0038	0.0021	6664	V	107	Hsk	20cmL+ST402ME
MR Leo	2457753.1002	-0.0024	0.0025	6736	V	181	Hsk	25cmL+ST402ME
V LMi	2457434.9750	0.0276	0.0020	69688	V	133	Hsk	20cmL+ST402ME
X LMi	2457459.9758	0.2769	0.0026	26683	V	106	Hsk	20cmL+ST402ME
BF Lep	2457668.2663	-0.0160	0.0020	7429	V	135	Hsk	25cmL+ST402ME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
TV Lib	2457490.1813	-0.0073	0.0008	138982	V	114	Hsk	13cmR+ST8XME
RW Lyn	2457420.9414	-0.1966	0.0019	63060	V	171	Hsk	20cmL+ST402ME
RW Lyn	2457676.2041	-0.2002	0.0021	63572	V	135	Hsk	20cmL+ST402ME
TV Lyn	2457676.2125	0.0328	0.0038	69500	V	135	Hsk	13cmR+ST8XME
TV Lyn	2458110.1068	0.0330	0.0028	71303	V	114	Hsk	25cmL+ST402ME
EP Lyn	2457671.1880	0.1815	0.0020	12889	V	67	Hsk	25cmL+ST402ME
RR Lyr	2457685.9265	0.1370	0.0022	26042	cG	156	Hsk	CANON X3
RR Lyr	2457955.1464	0.0947	0.0035	26517	cG	130	Hsk	CANON X4
RR Lyr	2458022.0261	0.0840	0.0027	26635	cG	187	Hsk	CANON X4
RR Lyr	2458063.9665	0.0762	0.0017	26709	cG	170	Hsk	CANON X4
CN Lyr	2458015.0770	0.0242	0.0040	32886	V	64	Hsk	13cmR+ST8XME
FN Lyr	2457513.2593	0.0330	0.0025	44907	V	112	Hsk	20cmL+ST402ME
KX Lyr	2457685.9195	0.0123	0.0020	40950	V	160	Hsk	20cmL+ST402ME
V895 Mon	2457679.2953	-0.0424	0.0025	9234	V	137	Hsk	20cmL+ST402ME
ST Oph	2457508.1646	-0.0267	0.0012	64575	V	120	Hsk	20cmL+ST402ME
ST Oph	2457902.2272	-0.0258	0.0019	65450	V	195	Hsk	20cmL+ST402ME
V445 Oph	2457823.3265	0.0492	0.0010	76267	V	119	Hsk	20cmL+ST402ME
V452 Oph	2457863.2733	0.0012	0.0016	38060	V	90	Hsk	20cmL+ST402ME
V455 Oph	2457824.3312	0.1257	0.0022	35229	V	111	Hsk	20cmL+ST402ME
V816 Oph	2457863.2057	-0.1484	0.0017	56507	V	67	Hsk	20cmL+ST402ME
CM Ori	2457760.0431	0.0098	0.0020	49490	V	144	Hsk	20cmL+ST402ME
CM Ori	2458109.0011	0.0173	0.0026	50022	V	125	Hsk	20cmL+ST402ME
V964 Ori	2457780.0725	-0.0319	0.0017	52075	V	85	Hsk	25cmL+ST402ME
V964 Ori	2458109.0936	-0.0466	0.0011	52727	V	126	Hsk	20cmL+ST402ME
VV Peg	2457588.2412	-0.0013	0.0013	37263	V	130	Hsk	20cmL+ST402ME
VV Peg	2458063.9363	0.0048	0.0014	38237	V	116	Hsk	20cmL+ST402ME
AV Peg	2457542.2184	0.1728	0.0011	35227	V	153	Hsk	20cmL+ST402ME
AV Peg	2458027.0743	0.1834	0.0009	36469	V	127	Hsk	13cmR+ST8XME
BF Peg	2457609.2949	-0.0735	0.0031	29543	V	188	Hsk	20cmL+ST402ME
BF Peg	2458052.0397	-0.0937	0.0018	30436	V	149	Hsk	20cmL+ST402ME
BH Peg	2458062.9000	-0.1458	0.0024	29170	V	134	Hsk	20cmL+ST402ME
CG Peg	2457974.2440	-0.0681	0.0019	40399	V	136	Hsk	20cmL+ST402ME
CV Peg	2458051.9260	-0.0722	0.0021	59173	V	125	Hsk	25cmL+ST402ME
CY Peg	2458022.1176	0.3216	0.0017	51319	V	136	Hsk	13cmR+ST8XME
DZ Peg	2458082.0077	0.1842	0.0020	39830	V	112	Hsk	20cmL+ST402ME
ES Peg	2457921.2062	0.1881	0.0013	37165	V	159	Hsk	20cmL+ST402ME
ES Peg	2458104.8964	0.1912	0.0023	37506	V	53	Hsk	20cmL+ST402ME
ET Peg	2457542.2033	-0.0679	0.0014	37842	V	167	Hsk	25cmL+ST402ME
ET Peg	2457747.9375	-0.0640	0.0023	38262	V	105	Hsk	20cmL+ST402ME
ET Peg	2458057.0204	-0.0664	0.0025	38893	V	73	Hsk	25cmL+ST402ME
IY Peg	2457974.1741	0.0054	0.0021	13333	V	109	Hsk	25cmL+ST402ME
V453 Peg	2457686.0540	-0.0133	0.0018	6442	V	185	Hsk	20cmL+ST402ME
V453 Peg	2458027.0820	-0.0082	0.0028	7022	V	155	Hsk	25cmL+ST402ME
V509 Peg	2457997.1740	0.0153	0.0010	12954	V	120	Hsk	20cmL+ST402ME
V509 Peg	2458109.9200	0.0149	0.0011	13263	V	98	Hsk	25cmL+ST402ME
V606 Peg	2458064.0069	-0.0099	0.0018	7088	V	115	Hsk	20cmL+ST402ME
TU Per	2457668.1735	-0.2298	0.0018	31126	V	87	Hsk	13cmR+ST8XME
AR Per	2458090.9860	0.0692	0.0020	72504	V	102	Hsk	20cmL+ST402ME
ET Per	2457759.9342	0.0448	0.0014	75065	V	143	Hsk	20cmL+ST402ME
ET Per	2458057.0174	0.0417	0.0020	75819	V	88	Hsk	20cmL+ST402ME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
FM Per	2457753.1061	-0.1943	0.0012	49034	V	175	Hsk	20cmL+ST402ME
FM Per	2458104.9102	-0.1261	0.0021	49753	V	47	Hsk	25cmL+ST402ME
V375 Per	2457759.9183	0.1686	0.0024	53510	V	143	Hsk	25cmL+ST402ME
FF Psc	2458109.9943	0.0431	0.0017	9480	V	137	Hsk	25cmL+ST402ME
FR Psc	2457753.0244	0.0265	0.0022	8869	V	85	Hsk	25cmL+ST402ME
FR Psc	2458108.9106	0.0266	0.0014	9650	V	130	Hsk	20cmL+ST402ME
HT Psc	2457752.9165	-0.0503	0.0012	7317	V	110	Hsk	25cmL+ST402ME
HT Psc	2458052.0244	-0.0510	0.0017	7862	V	152	Hsk	25cmL+ST402ME
HT Psc	2458108.9994	-0.0491	0.0021	7967	V	110	Hsk	25cmL+ST402ME
XX Pup	2457404.0653	0.0489	0.0015	30223	V	153	Hsk	13cmR+ST8XME
BB Pup	2457815.9609	0.1502	0.0019	39549	V	123	Hsk	20cmL+ST402ME
VY Ser	2457863.2474	0.0639	0.0048	37303	cG	120	Hsk	CANON X4
AN Ser	2457513.0813	0.0012	0.0012	81989	V	120	Hsk	25cmL+ST402ME
AV Ser	2457490.1818	0.1783	0.0019	59781	V	100	Hsk	25cmL+ST402ME
AV Ser	2457902.1727	0.1832	0.0015	60626	V	100	Hsk	13cmR+ST8XME
AW Ser	2457508.2766	0.0458	0.0016	48843	V	123	Hsk	20cmL+ST402ME
BH Ser	2457463.2461	0.1436	0.0011	36775	V	110	Hsk	13cmR+ST8XME
CS Ser	2457513.0876	0.0234	0.0028	49994	V	121	Hsk	20cmL+ST402ME
DF Ser	2457496.0768	0.1020	0.0020	63476	V	66	Hsk	20cmL+ST402ME
V423 Ser	2457463.1896	-0.0145	0.0021	7988	V	124	Hsk	20cmL+ST402ME
V Sex	2457725.3494	0.0420	0.0031	61908	V	91	Hsk	20cmL+ST402ME
SS Tau	2457641.2410	0.1580	0.0018	50303	V	141	Hsk	25cmL+ST402ME
SS Tau	2458091.0587	0.1761	0.0017	51519	V	125	Hsk	20cmL+ST402ME
IY Tau	2457449.9541	0.1664	0.0028	83520	V	137	Hsk	25cmL+ST402ME
IY Tau	2458082.0953	0.1813	0.0042	85199	V	110	Hsk	25cmL+ST402ME
U Tri	2457671.2701	-0.0561	0.0015	86240	V	106	Hsk	20cmL+ST402ME
U Tri	2457779.9502	-0.0585	0.0014	86483	V	123	Hsk	20cmL+ST402ME
RV UMa	2457421.1932	0.1316	0.0014	26376	cG	196	Hsk	CANON KISS X3
TU UMa	2457444.3203	-0.0630	0.0017	26204	V	96	Hsk	13cmR+ST8XME
TU UMa	2457743.2251	-0.0632	0.0018	26740	V	126	Hsk	0cmL+ST402ME
AB UMa	2457422.2141	0.1267	0.0047	35349	V	152	Hsk	25cmL+ST402ME
EX UMa	2457460.0215	-0.0064	0.0027	4111	V	193	Hsk	13cmR+ST8XME
ST Vir	2457824.2138	-0.1400	0.0011	41594	V	131	Hsk	13cmR+ST8XME
UU Vir	2457872.0214	0.0112	0.0011	33798	V	159	Hsk	20cmL+ST402ME
UV Vir	2457476.0557	0.0218	0.0033	29779	V	150	Hsk	13cmR+ST8XME
UZ Vir	2457463.1544	0.1308	0.0012	70740	V	140	Hsk	25cmL+ST402ME
AE Vir	2457422.3188	0.1232	0.0029	45972	V	119	Hsk	20cmL+ST402ME
AF Vir	2457892.0018	0.1616	0.0015	36295	V	183	Hsk	25cmL+ST402ME
AT Vir	2457490.1660	0.1369	0.0020	33876	V	103	Hsk	20cmL+ST402ME
AV Vir	2457872.0120	0.0251	0.0029	24968	V	162	Hsk	25cmL+ST402ME
BC Vir	2457866.9848	0.2771	0.0015	67216	V	138	Hsk	25cmL+ST402ME
V388 Vir	2457421.2787	0.0203	0.0034	6515	V	117	Hsk	13cmR+ST8XME
V419 Vir	2457758.3512	-0.0798	0.0036	9852	V	103	Hsk	20cmL+ST402ME
V476 Vir	2457512.9810	0.0614	0.0023	4335	V	103	Hsk	20cmL+ST402ME
CE Vul	2458026.9511	-0.1135	0.0015	56279	V	156	Hsk	25cmL+ST402ME
FH Vul	2457955.1570	-0.1674	0.0030	54087	V	88	Hsk	20cmL+ST402ME
FH Vul	2458056.9147	-0.1698	0.0020	54338	V	144	Hsk	20cmL+ST402ME
ASAS J020058+1332.8	2457697.1929	0.0019	0.0033	0	V	79	Hsk	25cmL+ST402ME
ASAS J020058+1332.8	2457760.0394	-0.0005	0.0024	102	V	80	Hsk	25cmL+ST402ME
ASAS J020058+1332.8	2458090.9177	-0.0034	0.0025	639	V	95	Hsk	25cmL+ST402ME

star	max.HJD	O-C	err	E	band	n obs.	code	instrument
NSV 1443	2458110.0794	0.0030	0.0019	770	V	115	Hsk	13cmR+ST8XME
NSV 1443	2458082.0705	-0.0006	0.0017	724	V	105	Hsk	13cmR+ST8XME
NSV 1443	2457641.2922	0.0000	0.0030	0	V	102	Hsk	20cmL+ST402ME
NSV 3833	2458060.2970	-0.0008	0.0030	745	V	80	Hsk	20cmL+ST402ME
NSV 3833	2457699.2619	0.0089	0.0040	4	V	172	Hsk	20cmL+ST402ME
NSV 3833	2457717.2669	-0.0139	0.0015	41	V	208	Hsk	25cmL+ST402ME
NSV 3833	2457422.0131	-0.0003	0.0025	-565	V	259	Hsk	13cmR+ST8XME
NSV 3833	2457697.3064	0.0024	0.0037	0	V	158	Hsk	25cmL+ST402ME

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