

# Variable Star Bulletin

## Visual and CCD minima of eclipsing binaries during 2013

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Received 2014 Feb. 01

Following table is summary of minima of eclipsing binary reported from VSOLJ members.

star	min.		O-C	E	color	n	obs.	inst.
AA And	2456557.1760		-0.0044	4338	Rc	346	Siz	35SC+ST-9E
EP And	2456562.1174		+0.0698	34455	Rc	374	Siz	35SC+ST-9E
EP And	2456562.3183	*1	+0.0686	34455.5	Rc	374	Siz	35SC+ST-9E
EP And	2456593.0308	*1	+0.0689	34531.5	Rc	390	Siz	35SC+ST-9E
EP And	2456613.0337		+0.0685	34581	V	402	Ioh	30SC+ST-9XE
EP And	2456613.2354	*1	+0.0682	34581.5	V	402	Ioh	30SC+ST-9XE
GZ And	2456593.1396		-0.0033	13419	V	375	Ioh	30SC+ST-9XE
V404 And	2456553.1405		+0.0074	5995	Rc	317	Siz	35SC+ST-9E
OO Aql	2456411.1834		+0.0566	35119	Ic	330	Kis	20SC+E47+
OO Aql	2456534.588	*1	+0.058	35362.5	vis	14	Set	
CX Aqr	2456534.679		-0.009	7256	vis	21	Set	
DD Aqr	2456554.955		-0.030	4558	B	96	Nga	20SC+ST-402
DD Aqr	2456554.956		-0.029	4558	V	94	Nga	20SC+ST-402
DD Aqr	2456554.959		-0.026	4558	Ic	93	Nga	20SC+ST-402
DD Aqr	2456565.0545		-0.0246	4572	Ic	68	Nga	20SC+ST-402
DD Aqr	2456565.0553		-0.0238	4572	B	68	Nga	20SC+ST-402
DD Aqr	2456565.0559		-0.0232	4572	V	68	Nga	20SC+ST-402
HV Aqr	2456514.0189		-0.0159	10719	Ic	75	Nga	20SC+ST-402
HV Aqr	2456531.9933		-0.0155	10767	Ic	77	Nga	10L+CV-04
MU Aqr	2456524.0034	*1	-0.1361	15161.5	B	78	Nga	20SC+ST-402
MU Aqr	2456524.0049	*1	-0.1346	15161.5	V	84	Nga	20SC+ST-402
MU Aqr	2456524.0061	*1	-0.1334	15161.5	Ic	83	Nga	20SC+ST-402
MU Aqr	2456524.1370		-0.1386	15162	Ic	83	Nga	20SC+ST-402
MU Aqr	2456524.1400		-0.1356	15162	V	84	Nga	20SC+ST-402
MU Aqr	2456524.1408		-0.1348	15162	B	78	Nga	20SC+ST-402
OO Aqr	2456552.9417	*1	+0.0441	7373.5	Ic	49	Nga	10L+CV-04
SS Ari	2456601.9151		-0.0147	10103	Rc	547	Siz	35SC+ST-9E
SS Ari	2456602.1190	*1	-0.0138	10103.5	Rc	547	Siz	35SC+ST-9E
SS Ari	2456604.1491	*1	-0.0136	10108.5	Rc	435	Siz	35SC+ST-9E
BN Ari	2456575.0589	*1	-0.0374	16866.5	Rc	366	Siz	35SC+ST-9E
BN Ari	2456575.2082		-0.0378	16867	Rc	366	Siz	35SC+ST-9E

star	min.		O-C	E	color	n	obs.	inst.
WW Aur	2456657.9970		+0.0012	1646	V	306	Kis	85mmlens+ST-10XME
ZZ Aur	2456601.1778		-0.0016	6821	Rc	303	Siz	35SC+ST-9E
EM Aur	2456640.2463		+0.0015	1175	V	383	Ioh	30SC+ST-9XE
HS Aur	2456598.2810		+0.0011	1069	Rc	449	Siz	35SC+ST-9E
IU Aur	2456295.0549		+0.0028	9852	V	675	Ioh	30SC+ST-9XE
KO Aur	2456313.2164	*7	-0.0206	2226	V	337	Ioh	30SC+ST-9XE
MN Aur	2456328.1559	*1	+0.9772	864.5	V	479	Ioh	30SC+ST-9XE
TZ Boo	2456380.2115		+0.1405	4774	V	305	Mdy	35SC+ST-10XME
TZ Boo	2456458.655		+0.133	5038	vis	20	Set	
VW Boo	2456396.0608	*1	-0.0039	11381.5	Rc	381	Siz	35SC+ST-9E
VW Boo	2456396.2324		-0.0034	11382	Rc	381	Siz	35SC+ST-9E
CV Boo	2456394.1905		-0.0008	4597	Rc	384	Siz	35SC+ST-9E
GI Boo	2456415.1095		+0.1773	4962	Rc	221	Siz	35SC+ST-9E
HH Boo	2456340.2649		-0.0026	12050	V	243	Ioh	30SC+ST-9XE
HH Boo	2456344.2497	*1	-0.0012	12062.5	V	281	Ioh	30SC+ST-9XE
HH Boo	2456373.0877		-0.0025	12153	Rc	377	Siz	35SC+ST-9E
HH Boo	2456373.2484	*1	-0.0011	12153.5	Rc	377	Siz	35SC+ST-9E
SV Cam	2456326.622		+0.065	23154	vis	22	Set	
WW Cam	2456634.1337		-0.0269	7146	V	439	Ioh	30SC+ST-9XE
AL Cam	2456628.0594	*1*29	-0.0852	10716.5	V	95	Kis	20SC+ST-8300M
AT Cam	2456305.1108		-0.1213	21669	Rc	524	Siz	35SC+ST-9E
AT Cam	2456319.0716		-0.1195	21679	V	732	Ioh	30SC+ST-9XE
FN Cam	2456649.0723	*31	+0.0870	12034	V	300	Kis	20SC+ST-8300M
RZ Cas	2456326.582		+0.073	10982	vis	21	Set	
RZ Cas	2456577.574		+0.063	11192	vis	22	Set	
V541 Cas	2456601.1697	*1	+0.4280	19333	V	451	Ioh	30SC+ST-9XE
V541 Cas	2456605.2634	*1	+0.4311	19337.5	V	237	Ioh	30SC+ST-9XE
WY Cep	2456578.0783		+0.0211	25183	Rc	572	Siz	35SC+ST-9E
WZ Cep	2456565.0027	*1	+0.0776	68330.5	Rc	367	Siz	35SC+ST-9E
WZ Cep	2456565.2104		+0.0766	68331	Rc	367	Siz	35SC+ST-9E
TU Cet	2456609.0957	*1	+0.5633	6399.5	Ic	61	Nga	20SC+ST-402
TV Cet	2456615.0089		+0.0060	1685	B	323	Nga	20SC+ST-402
TV Cet	2456615.0089		+0.0060	1685	V	323	Nga	20SC+ST-402
TV Cet	2456615.0091		+0.0062	1685	Ic	323	Nga	20SC+ST-402
VV Cet	2456563.1855		+0.1312	48306	Ic	112	Nga	20SC+ST-402
VV Cet	2456563.186		+0.132	48306	B	104	Nga	20SC+ST-402
VV Cet	2456563.186		+0.132	48306	V	111	Nga	20SC+ST-402
YY Cet	2456608.9782		+0.3921	26198	Ic	55	Nga	10L+CV-04
AA Cet	2456609.0248		-0.0229	28611	cG	51	Nga	105mmlens+EosKissDigitalN
AA Cet	2456615.9875		-0.0304	28624	cG	82	Nga	105mmlens+EosKissDigitalN
AA Cet	2456637.9740		-0.0269	28665	cG	61	Nga	105mmlens+EosKissDigitalN
AA Cet	2456640.9154	*1	-0.0344	28670.5	cG	75	Nga	105mmlens+EosKissDigitalN
AA Cet	2456641.9798	*1	-0.0424	28672.5	cG	76	Nga	105mmlens+EosKissDigitalN
AA Cet	2456648.9579	*1	-0.0345	28685.5	cG	58	Nga	105mmlens+EosKissDigitalN
DY Cet	2456596.0396	*1*32	-0.0544	18366.5	Ic	99	Nga	10L+CV-04
DY Cet	2456601.9909	*32	-0.0538	18380	Ic	100	Nga	10L+CV-04
DY Cet	2456603.9772	*1*32	-0.0511	18384.5	Ic	58	Nga	10L+CV-04
DY Cet	2456614.9942	*1*32	-0.0539	18409.5	Ic	85	Nga	10L+CV-04
R CMa	2456344.0748		+0.1132	10612	cG	50	Edm	70mmlens+EosKissX2
R CMa	2456649.0766	*1	+0.1150	10880.5	cG	87	Nga	105mmlens+EosKissDigitalN
R CMa	2456658.1693	*1	+0.1202	10888.5	cG	71	Nga	105mmlens+EosKissDigitalN
RT CMa	2456634.6337	*1	-0.6017	23195.5	V	192	Kis	20SC+ST-8300M
GZ CMa	2456311.0162		+1.7097	3644	Ic	95	Nga	10L+CV-04
IQ CMa	2456312.0028	*33	-0.0781	10681	Ic	54	Nga	10L+CV-04
IQ CMa	2456655.0185	*33	-0.0815	11150	Ic	93	Nga	10L+CV-04
KL CMa	2456642.0395	*1*28	-0.0134	4619.5	Ic	92	Nga	10L+CV-04

star	min.		O-C	E	color	n	obs.	inst.
XZ CMi	2456334.0913		-0.0020	23997	Ic	121	Nga	20SC+ST-402
XZ CMi	2456334.0915		-0.0018	23997	B	120	Nga	20SC+ST-402
XZ CMi	2456334.0917		-0.0016	23997	V	121	Nga	20SC+ST-402
XZ CMi	2456336.9850		-0.0023	24002	Ic	90	Nga	20SC+ST-402
XZ CMi	2456336.9853		-0.0020	24002	B	88	Nga	20SC+ST-402
XZ CMi	2456336.9853		-0.0020	24002	V	89	Nga	20SC+ST-402
XZ CMi	2456361.0089	*1	+0.0010	24043.5	B	78	Nga	20SC+ST-402
XZ CMi	2456361.0078	*1	-0.0001	24043.5	V	79	Nga	20SC+ST-402
XZ CMi	2456361.0085	*1	+0.0006	24043.5	Ic	79	Nga	20SC+ST-402
AM CMi	2456334.1151		+0.2124	30504	Rc	274	Siz	35SC+ST-9E
AM CMi	2456335.1263		+0.2044	30505	Rc	350	Siz	35SC+ST-9E
BB CMi	2456651.0430	*32	-0.0561	5235	Rc	641	Siz	35SC+ST-9E
BB CMi	2456658.1827	*32	-0.0521	5244	Rc	543	Siz	35SC+ST-9E
BF CMi	2456296.2553		-0.1478	10271	V	345	Ioh	30SC+ST-9XE
BF CMi	2456321.0481		-0.1494	10292	Ic	104	Nga	20SC+ST-402
BF CMi	2456321.0528		-0.1447	10292	B	104	Nga	20SC+ST-402
BF CMi	2456321.0544		-0.1431	10292	V	104	Nga	20SC+ST-402
BX CMi	2456315.0479	*9	-0.0872	4034	Rc	289	Siz	35SC+ST-9E
BX CMi	2456654.3033	*9	-0.0920	4255	V	300	Ioh	30SC+ST-9XE
CX CMi	2456323.1211	*1	+0.0123	3896.5	V	254	Ioh	30SC+ST-9XE
CZ CMi	2456307.2085	*1	+0.0826	9312.5	V	312	Ioh	30SC+ST-9XE
CZ CMi	2456309.1279		+0.0832	9317	Ic	75	Nga	20SC+ST-402
CZ CMi	2456309.1281		+0.0834	9317	B	71	Nga	20SC+ST-402
CZ CMi	2456309.1287		+0.0840	9317	V	74	Nga	20SC+ST-402
CZ CMi	2456311.0454	*1	+0.0820	9321.5	B	145	Nga	20SC+ST-402
CZ CMi	2456311.0461	*1	+0.0827	9321.5	Ic	144	Nga	20SC+ST-402
CZ CMi	2456311.0465	*1	+0.0831	9321.5	V	145	Nga	20SC+ST-402
CZ CMi	2456318.0787		+0.0799	9338	Ic	91	Nga	20SC+ST-402
CZ CMi	2456318.0799		+0.0811	9338	V	90	Nga	20SC+ST-402
CZ CMi	2456318.0803		+0.0815	9338	B	89	Nga	20SC+ST-402
CZ CMi	2456328.1004	*1	+0.0814	9361.5	B	70	Nga	20SC+ST-402
CZ CMi	2456328.1032	*1	+0.0842	9361.5	Ic	81	Nga	20SC+ST-402
CZ CMi	2456328.1051	*1	+0.0861	9361.5	V	77	Nga	20SC+ST-402
WW Cnc	2456309.1920		+0.5555	26143	Rc	311	Siz	35SC+ST-9E
WY Cnc	2456324.1683		-0.0384	36138	V	397	Ioh	30SC+ST-9XE
WY Cnc	2456324.1686		-0.0381	36138	Rc	410	Siz	35SC+ST-9E
RW Com	2456357.0330		-0.0028	68822	Rc	424	Siz	35SC+ST-9E
RW Com	2456357.1507	*1	-0.0038	68822.5	Rc	424	Siz	35SC+ST-9E
RW Com	2456357.2702		-0.0030	68823	Rc	424	Siz	35SC+ST-9E
RW Com	2456368.1880		-0.0031	68869	V	417	Ioh	30SC+ST-9XE
RW Com	2456368.3058	*1	-0.0040	68869.5	V	417	Ioh	30SC+ST-9XE
RZ Com	2456361.0348		+0.0470	63584	Rc	360	Siz	35SC+ST-9E
RZ Com	2456361.2033	*1	+0.0462	62584.5	Rc	360	Siz	35SC+ST-9E
SS Com	2456458.670		+0.179	76203	vis	19	Set	
CC Com	2456447.626		-0.016	76643	vis	13	Set	
CC Com	2456458.657		-0.019	76693	vis	18	Set	
TW CrB	2456422.0140		+0.0483	31456	Ic	364	Siz	35SC+ST-9E
AR CrB	2456396.2375		-0.0056	10144	V	146	Ioh	30SC+ST-9XE
V Crt	2456362.631		-0.005	21317	vis	17	Set	
RV Crv	2456386.073		-0.089	20551	Ic	79	Nga	10L+CV-04
SX Crv	2456396.0242		+0.0650	48568	Ic	85	Nga	10L+CV-04
BO CVn	2456363.9741	*14	+0.0072	7467	Rc	468	Siz	35SC+ST-9E
BO CVn	2456364.2321	*1*14	+0.0064	7467.5	Rc	468	Siz	35SC+ST-9E
BO CVn	2456367.0777	*14	+0.0060	7473	Rc	418	Siz	35SC+ST-9E
BO CVn	2456367.0700	*14	-0.0017	7473	V	353	Ioh	30SC+ST-9XE
DF Cvn	2456339.1082	*1*11	+0.0786	17644.5	Rc	257	Siz	35SC+ST-9E

star	min.		O-C	E	color	n	obs.	inst.
DF Cvn	2456339.2722	*11	+0.0792	17645	Rc	257	Siz	35SC+ST-9E
FZ Del	2456519.0683	*1	-0.0352	32168.5	Ic	60	Nga	20SC+ST-402
FZ Del	2456522.9856	*1	-0.0340	32173.5	Ic	91	Nga	10L+CV-04
MR Del	2456512.1039	*26	-0.0054	15357	B	57	Nga	20SC+ST-402
MR Del	2456512.1042	*26	-0.0051	15357	V	67	Nga	20SC+ST-402
MR Del	2456512.1042	*26	-0.0051	15357	Ic	91	Nga	20SC+ST-402
AR Dra	2456297.1506		+0.0239	19869	cG	172	Hsk	13R+EosKissX3
UX Eri	2456602.0469		+0.2008	32967	B	98	Nga	20SC+ST-402
UX Eri	2456602.0464		+0.2003	32967	V	98	Nga	20SC+ST-402
UX Eri	2456602.0462		+0.2001	32967	Ic	99	Nga	20SC+ST-402
UX Eri	2456641.0071	*1	+0.1990	33054.5	B	96	Nga	20SC+ST-402
UX Eri	2456641.0083	*1	+0.2002	33054.5	V	97	Nga	20SC+ST-402
UX Eri	2456641.0084	*1	+0.2003	33054.5	Ic	97	Nga	20SC+ST-402
UX Eri	2456649.0227	*1	+0.1996	33072.5	V	347	Ioh	30SC+ST-9XE
YY Eri	2456294.9526		+0.1488	45765	Ic	76	Nga	10L+CV-04
YY Eri	2456624.966	*1	+0.148	46791.5	Ic	56	Nga	10L+CV-04
YY Eri	2456637.0247		+0.1512	46829	B	175	Nga	20SC+ST-402
YY Eri	2456637.0249		+0.1514	46829	V	173	Nga	20SC+ST-402
YY Eri	2456637.0249		+0.1514	46829	Ic	171	Nga	20SC+ST-402
BC Eri	2456638.1089	*26	+0.0746	9743	B	48	Nga	20SC+ST-402
BC Eri	2456638.1078	*26	+0.0735	9743	V	49	Nga	20SC+ST-402
BC Eri	2456638.1083	*26	+0.0740	9743	Ic	50	Nga	20SC+ST-402
BU Eri	2456648.9318	*1*30	+0.2129	5668.5	Ic	93	Nga	10L+CV-04
BV Eri	2456616.0589	*1	-0.1944	25935.5	Ic	284	Nga	20SC+ST-402
BV Eri	2456616.0592	*1	-0.1941	25935.5	V	286	Nga	20SC+ST-402
BV Eri	2456616.0601	*1	-0.1932	25935.5	B	286	Nga	20SC+ST-402
AE For	2456641.9620	*1*27	-0.2267	8866.5	Ic	50	Nga	10L+CV-04
SX Gem	2456351.0624		-0.0503	27303	Rc	230	Siz	35SC+ST-9E
WW em	2456353.9785		+0.0286	24535	V	357	Ioh	30SC+ST-9XE
AF Gem	2456633.2703		-0.0717	23700	V	335	Ioh	30SC+ST-9XE
AL Gem	2456657.0961		+0.0788	21801	Rc	680	Siz	35SC+ST-9E
GX Gem	2456629.0877	*1*25	-0.6071	1063.5	Rc	361	Siz	35SC+ST-9E
LO Gem	2456625.1572	*24	+0.0018	1843	Rc	476	Siz	35SC+ST-9E
DK Her	2456436.1762		-0.1537	12947	Rc	306	Siz	35SC+ST-9E
V450 Her	2456437.0512		-0.3538	33690	Rc	434	Siz	35SC+ST-9E
V878 Her	2456416.1822	*21	-0.0464	12264	Rc	424	Siz	35SC+ST-9E
V1045 Her	2456421.1831	*22	-0.0831	10065	Rc	243	Siz	35SC+ST-9E
V1055 Her	2456410.1225	*18	+0.0107	13803.5	Rc	400	Siz	35SC+ST-9E
V1055 Her	2456410.2777	*1*18	+0.0082	13804	Rc	400	Siz	35SC+ST-9E
V1071 Her	2456405.0334	*16	-0.1407	9484	Rc	429	Siz	35SC+ST-9E
V1071 Her	2456405.2964	*1*16	-0.1466	9484.5	Rc	429	Siz	35SC+ST-9E
V1097 Her	2456411.0818		+0.0088	10940	Rc	329	Siz	35SC+ST-9E
V1097 Her	2456411.2637	*1	+0.0103	10940.5	Rc	329	Siz	35SC+ST-9E
VW Hya	2456351.9874		+0.2621	11100	Ic	183	Kis	20SC+E47+
AE Hya	2456323.1287		+0.0772	76207	Ic	256	Kis	20SC+E47+
AE Hya	2456324.1172	*1	+0.0835	76209.5	Ic	261	Kis	20SC+E47+
AV Hya	2456358.1036		-0.1046	28804	V	402	Ioh	30SC+ST-9XE
DF Hya	2456362.592		+0.079	76299	vis	17	Set	
EZ Hya	2456335.0610	*1	-0.0995	30862.5	Ic	84	Nga	10L+CV-04
EZ Hya	2456337.0786		-0.1058	30867	Ic	84	Nga	10L+CV-04
EZ Hya	2456357.9984	*1	-0.0995	30913.5	Ic	104	Nga	10L+CV-04
OW Hya	2456362.0128	*13	-0.0310	526	B	443	Nga	20SC+ST-402
OW Hya	2456362.0119	*13	-0.0319	526	B	444	Nga	20SC+ST-402
OW Hya	2456362.0126	*13	-0.0312	526	B	445	Nga	20SC+ST-402
V409 Hya	2456333.1430	*1	+0.0409	6730.5	Rc	213	Siz	35SC+ST-9E
V409 Hya	2456360.0657	*1	+0.0442	6787.5	V	301	Ioh	30SC+ST-9XE
SW Lac	2456534.641	*1	-0.095	35106.5	vis	20	Set	

star	min.		O-C	E	color	n	obs.	inst.
VY Lac	2456552.1590		-0.1768	12355	Rc	234	Siz	35SC+ST-9E
RT Leo	2456354.1426		-0.0041	4365	Rc	483	Siz	35SC+ST-9E
UX Leo	2456337.1145		-0.3356	18826	Rc	251	Siz	35SC+ST-9E
AM Leo	2456362.0624	*1	+0.0137	37913.5	V	479	Ioh	30SC+ST-9XE
AM Leo	2456362.2462		+0.0146	37914	V	479	Ioh	30SC+ST-9XE
AM Leo	2456368.0985		+0.0141	37930	V	104	Nga	20SC+ST-402
AM Leo	2456368.0987		+0.0143	37930	B	104	Nga	20SC+ST-402
AM Leo	2456368.0989		+0.0145	37930	Ic	105	Nga	20SC+ST-402
GV Leo	2456304.2546	*1	+0.0581	13308.5	V	359	Ioh	30SC+ST-9XE
GV Leo	2456339.9969	*1	+0.0590	13442.5	Rc	409	Siz	35SC+ST-9E
GV Leo	2456340.1287		+0.0574	13443	Rc	409	Siz	35SC+ST-9E
GV Leo	2456340.2631	*1	+0.0585	13443.5	Rc	409	Siz	35SC+ST-9E
HI Leo	2456364.1506		+0.0040	18652	V	420	Ioh	30SC+ST-9XE
HI Leo	2456364.3051	*1	+0.0027	18652.5	V	420	Ioh	30SC+ST-9XE
RR Lep	2456302.0455		-0.0375	28320	B	65	Nga	20SC+ST-402
RR Lep	2456302.0456		-0.0374	28320	Ic	66	Nga	20SC+ST-402
RR Lep	2456302.0464		-0.0366	28320	V	65	Nga	20SC+ST-402
ES Lib	2456422.0041		+0.0964	18224	Ic	88	Nga	10L+CV-04
delta Lib	2456324.3316		-0.0362	5742	Ic	265	Kis	85mmlens+ST-10XME
delta Lib	2456422.0712		-0.0455	5784	B	135	Nga	50mmlens+EosKissDigital
delta Lib	2456422.0767		-0.0400	5784	V	137	Nga	50mmlens+EosKissDigital
T LMi	2456305.0898		-0.1028	3612	V	107	Hsk	20SC+ST-8XME
XY LMi	2456303.2366		-0.0236	9010	V	385	Ioh	30SC+ST-9XE
XY LMi	2456332.0702		-0.0247	9076	Rc	432	Siz	35SC+ST-9E
XY LMi	2456332.2900		-0.0234	9076.5	Rc	432	Siz	35SC+ST-9E
XY LMi	2456357.1932	*1	-0.0229	9133.5	V	434	Ioh	30SC+ST-9XE
TY Lyn	2456649.1834		+0.0576	7070	Rc	600	Siz	35SC+ST-9E
BG Lyn	2456299.1395	*3	-0.0070	11270	V	558	Ioh	30SC+ST-9XE
CD Lyn	2456315.1956	*8	-0.0297	1022	V	508	Ioh	30SC+ST-9XE
DY Lyn	2456322.2783		-0.1863	2755	V	361	Ioh	30SC+ST-9XE
RW Mon	2456320.9586		-0.0755	11878	cG	90	Hsk	13R+EosKissX3
AU Mon	2456325.9578		+0.0165	1217	Ic	83	Nga	10L+CV-04
DD Mon	2456305.0474	*1	+0.1727	45744.5	B	99	Nga	20SC+ST-402
DD Mon	2456305.0490	*1	+0.1743	45744.5	B	92	Nga	20SC+ST-402
DD Mon	2456305.0501	*1	+0.1754	45744.5	V	80	Nga	20SC+ST-402
NS Mon	2456311.1337	*1*5	+0.0005	2143.5	V	399	Ioh	30SC+ST-9XE
PR Mon	2456305.1711	*4	-0.0125	1478	V	373	Ioh	30SC+ST-9XE
V536 Mon	2456334.0453	*10	-0.0022	625	V	135	Ioh	30SC+ST-9XE
V536 Mon	2456334.0457	*10	-0.0018	625	Rc	132	Ioh	30SC+ST-9XE
V536 Mon	2456334.0460	*10	-0.0015	625	B	131	Ioh	30SC+ST-9XE
V753 Mon	2456317.0289	*6	+0.2769	11545	Ic	49	Nga	10L+CV-04
V864 Mon	2456308.9990		-0.0107	7805	Ic	91	Nga	10L+CV-04
V888 Mon	2456327.9524		-0.0223	1747	Ic	91	Nga	10L+CV-04
SW Oph	2456448.0146	*1	+0.3597	6280.5	Ic	92	Nga	20SC+ST-402
V502 Oph	2456447.0859		-0.1547	33686	B	110	Nga	20SC+ST-402
V502 Oph	2456447.0860		-0.1546	33686	V	111	Nga	20SC+ST-402
V502 Oph	2456447.0862		-0.1544	33686	Ic	111	Nga	20SC+ST-402
V502 Oph	2456452.072		-0.156	33697	Ic	60	Nga	10L+CV-04
ER Ori	2456298.9808		+0.1073	34654	Ic	66	Nga	10L+CV-04
ER Ori	2456626.0619	*1	+0.1128	35426.5	V	489	Ioh	30SC+ST-9XE
ER Ori	2456626.2734		+0.1127	35427	V	489	Ioh	30SC+ST-9XE
FF Ori	2456299.9712		+0.0140	13302	V	71	Nga	20SC+ST-402
FF Ori	2456299.9875		+0.0303	13302	Ic	71	Nga	20SC+ST-402
FF Ori	2456299.9895		+0.0323	13302	B	69	Nga	20SC+ST-402
FI Ori	2456656.1440		+0.2708	4028	Rc	649	Ioh	30SC+ST-9XE
FZ Ori	2456300.9960	*1	-0.0510	30692.5	Ic	75	Nga	10L+CV-04
FZ Ori	2456300.9962	*1	-0.0508	30692.5	V	169	Ioh	30SC+ST-9XE

star	min.		O-C	E	color	n	obs.	inst.
FZ Ori	2456301.9968		-0.0502	30695	Ic	76	Nga	10L+CV-04
FZ Ori	2456612.1874	*1	-0.0492	31470.5	V	349	Ioh	30SC+ST-9XE
V343 Ori	2456312.1974	*1	+0.2470	28070.5	V	448	Ioh	30SC+ST-9XE
V536 Ori	2456658.0355		+0.3851	9441	Ic	119	Nga	20SC+ST-402
V536 Ori	2456658.0358		+0.3854	9441	B	118	Nga	20SC+ST-402
V536 Ori	2456658.0360		+0.3856	9441	V	119	Nga	20SC+ST-402
V1363 Ori	2456294.9446	*2	+0.1403	18047	V	112	Nga	20SC+ST-402
V1363 Ori	2456294.9458	*2	+0.1415	18047	B	111	Nga	20SC+ST-402
V1363 Ori	2456294.9461	*2	+0.1418	18047	Ic	111	Nga	20SC+ST-402
V1848 Ori	2456296.9739	*1	-0.0010	8374.5	Rc	398	Siz	35SC+ST-9E
V1848 Ori	2456297.1063		-0.0018	8375	Rc	398	Siz	35SC+ST-9E
V1848 Ori	2456639.1027		+0.0017	9659	B	143	Nga	20SC+ST-402
V1848 Ori	2456638.9705	*1	+0.0027	9658.5	V	142	Nga	20SC+ST-402
V1848 Ori	2456639.1030		+0.0020	9659	V	142	Nga	20SC+ST-402
V1848 Ori	2456638.9703	*1	+0.0025	9658.5	Ic	138	Nga	20SC+ST-402
V1848 Ori	2456639.1030		+0.0020	9659	Ic	138	Nga	20SC+ST-402
V2790 Ori	2456623.1092		-0.0096	17723	Rc	412	Siz	35SC+ST-9E
V2790 Ori	2456623.2547	*1	-0.0080	17723.5	Rc	412	Siz	35SC+ST-9E
BX Peg	2456515.1361	*1	-0.1082	43933.5	V	222	Ioh	30SC+ST-9XE
BX Peg	2456515.2755		-0.1090	43934	V	222	Ioh	30SC+ST-9XE
BX Peg	2456534.624		-0.110	44003	vis	20	Set	
RW Per	2456605.0847		+0.0521	1508	Rc	334	Siz	35SC+ST-9E
ST Per	2456298.0931		+0.2244	5234	V	553	Ioh	30SC+ST-9XE
KN Per	2456556.2069	*28	+0.0147	9297	V	270	Ioh	30SC+ST-9XE
KN Per	2456556.2086	*28	+0.0164	9297	Rc	313	Siz	35SC+ST-9E
KR Per	2456627.1587		-0.0202	20991	V	785	Ioh	30SC+ST-9XE
KW Per	2456620.0154		+0.0172	15265	V	699	Ioh	30SC+ST-9XE
V432 Per	2456563.1130		+0.0826	64347	Rc	410	Siz	35SC+ST-9E
V432 Per	2456563.3053	*1	+0.1141	64347.5	Rc	410	Siz	35SC+ST-9E
V740 Per	2456592.0491		-0.1827	13924	Rc	428	Siz	35SC+ST-9E
V740 Per	2456592.2364	*1	-0.1819	13924.5	Rc	428	Siz	35SC+ST-9E
V873 Per	2456554.0883		-0.0177	17576	Rc	309	Siz	35SC+ST-9E
V873 Per	2456554.2359	*1	-0.0175	17576.5	Rc	309	Siz	35SC+ST-9E
beta Per	2456629.1338		+0.1102	3832	y	420	Kis	20SC+ST-8300M
RV Psc	2456613.9795	*1	-0.1080	58182.5	Rc	352	Siz	35SC+ST-9E
RV Psc	2456615.1397	*1	-0.0558	58184.5	Rc	409	Siz	35SC+ST-9E
VZ Psc	2456548.0656		-0.0052	48685	Ic	101	Nga	10L+CV-04
VZ Psc	2456553.0259		-0.0074	48704	V	90	Nga	20SC+ST-402
VZ Psc	2456553.0266		-0.0067	48704	Ic	82	Nga	20SC+ST-402
VZ Psc	2456553.0277		-0.0056	48704	B	89	Nga	20SC+ST-402
VZ Psc	2456553.1525	*1	-0.0114	48704.5	B	89	Nga	20SC+ST-402
VZ Psc	2456553.1560	*1	-0.0079	48704.5	Ic	82	Nga	20SC+ST-402
VZ Psc	2456553.1569	*1	-0.0070	48704.5	V	90	Nga	20SC+ST-402
DV Psc	2456557.0620	*29	+0.0322	15139	B	96	Ioh	30SC+ST-9XE
DV Psc	2456557.0631	*29	+0.0333	15139	V	116	Ioh	30SC+ST-9XE
DV Psc	2456557.0621	*29	+0.0323	15139	Rc	111	Ioh	30SC+ST-9XE
DV Psc	2456578.9685	*29	+0.0325	15210	V	185	Ioh	30SC+ST-9XE
DV Psc	2456578.9688	*29	+0.0328	15210	Rc	207	Ioh	30SC+ST-9XE
DV Psc	2456578.9691	*29	+0.0331	15210	B	188	Ioh	30SC+ST-9XE
DV Psc	2456579.1253	*1*29	+0.0351	15210.5	V	185	Ioh	30SC+ST-9XE
DV Psc	2456579.1269	*1*29	+0.0367	15210.5	Rc	207	Ioh	30SC+ST-9XE
DV Psc	2456579.1309	*1*29	+0.0407	15210.5	B	188	Ioh	30SC+ST-9XE
DV Psc	2456579.2770	*29	+0.0325	15211	Rc	207	Ioh	30SC+ST-9XE
GR Psc	2456578.1004		+0.0061	7528	V	651	Ioh	30SC+ST-9XE
TY Pup	2456323.9812	*1	+0.2063	26746.5	Ic	85	Nga	10L+CV-04
UZ Pup	2456323.0425	*1	-0.0062	14731.5	Ic	121	Nga	10L+CV-04

star	min.		O-C	E	color	n	obs.	inst.
VY Pup	2456641.1151		-0.1209	36303	V	376	Ioh	30SC+ST-9XE
V583 Pup	2456331.976		+0.004	4726	Ic	61	Nga	10L+CV-04
AO Ser	2456386.2159		-0.0147	25306	V	293	Mdy	35SC+ST-10XME
CC Ser	2456447.624	*1	-0.012	36755.5	vis	16	Set	
XX Sex	2456361.0392	*1	+0.0151	7491.5	Ic	114	Nga	10L+CV-04
V526 Sgr	2456417.2172		-0.0853	17903	Ic	232	Kis	20SC+E47+
RZ Tau	2456300.9406		+0.0687	44805	cG	119	Hsk	13R+EosKissX3
RZ Tau	2456639.0955	*1	+0.0772	45618.5	Rc	315	Siz	35SC+ST-9E
RZ Tau	2456658.0089		+0.0724	45664	V	498	Ioh	30SC+ST-9XE
RZ Tau	2456658.2168	*1	+0.0725	45664.5	V	498	Ioh	30SC+ST-9XE
SV Tau	2456656.1666		-0.0288	10260	V	545	Ioh	30SC+ST-9XE
AH Tau	2456608.1807		-0.1387	76789	cG	113	Hsk	13R+EosKissX3
AN Tau	2456596.1479		+0.3252	17598	Rc	538	Siz	35SC+ST-9E
CF Tau	2456617.1065		-0.1191	9422	Rc	285	Siz	35SC+ST-9E
EQ Tau	2456365.560		-0.034	47319	vis	15	Set	
ET Tau	2456648.1845		-0.0910	4550	V	407	Ioh	30SC+ST-9XE
GW Tau	2456577.2430		-0.0944	61867	V	274	Ioh	30SC+ST-9XE
GW Tau	2456620.2116		-0.0949	61934	Rc	381	Siz	35SC+ST-9E
HU Tau	2456637.9753		+0.0383	7471	cG	232	Ttm	49mmlens+EosKissX5
V1241 Tau	2456617.0223		+0.0160	35329	Ic	73	Nga	10L+CV-04
TY UMa	2456362.001		-0.089	47469	vis	16	Set	
TY UMa	2456365.605		-0.030	47479	vis	20	Set	
VV UMa	2456655.2635		-0.0556	15770	V	522	Ioh	30SC+ST-9XE
XZ UMa	2456322.1227		-0.1155	8307	Rc	314	Siz	35SC+ST-9E
ZZ UMa	2456332.1235		-0.0011	8864	V	287	Ioh	30SC+ST-9XE
AA UMa	2456321.1607		-0.1903	33445	Rc	459	Siz	35SC+ST-9E
AA UMa	2456335.2043		-0.1905	33475	B	180	Ioh	30SC+ST-9XE
AA UMa	2456335.2043		-0.1905	33475	Rc	181	Ioh	30SC+ST-9XE
AA UMa	2456335.2041		-0.1907	33475	V	183	Ioh	30SC+ST-9XE
KM UMa	2456345.1685	*1*12	-0.0125	14564.5	V	287	Ioh	30SC+ST-9XE
KM UMa	2456345.3302	*12	-0.0267	14565	V	287	Ioh	30SC+ST-9XE
KM UMa	2456349.2004	*12	-0.0270	14576	V	293	Ioh	30SC+ST-9XE
AG Vir	2456362.617		-0.002	17008	vis	16	Set	
AZ Vir	2456403.9643		-0.0234	35541	Rc	408	Siz	35SC+ST-9E
AZ Vir	2456404.1395	*1	-0.0230	35541.5	Rc	408	Siz	35SC+ST-9E
BH Bir	2456421.0334	*1	-0.0099	16147.5	Ic	81	Nga	10L+CV-04
GR Vir	2456419.0047		-0.1730	26927	Ic	86	Nga	20SC+ST-402
GR Vir	2456421.0874	*1	+0.0208	26931.5	B	99	Nga	20SC+ST-402
GR Vir	2456421.0879	*1	+0.0213	26931.5	V	99	Nga	20SC+ST-402
GR Vir	2456421.0882	*1	+0.0216	26931.5	Ic	99	Nga	20SC+ST-402
GR Vir	2456426.9855	*1	+0.0423	26945.5	B	77	Nga	20SC+ST-402
GR Vir	2456426.9867	*1	+0.0435	26945.5	Ic	80	Nga	20SC+ST-402
GR Vir	2456426.9868	*1	+0.0436	26945.5	V	76	Nga	20SC+ST-402
HT Vir	2456411.0539	*17	+0.0157	19405	B	205	Nga	20SC+ST-402
HT Vir	2456411.0543	*17	+0.0161	19405	Ic	205	Nga	20SC+ST-402
HT Vir	2456411.0546	*17	+0.0164	19405	V	205	Nga	20SC+ST-402
HW Vir	2456390.9563	*1*15	-0.0081	91333.5	V	82	Nga	20SC+ST-402
HW Vir	2456390.9578	*1*15	-0.0066	91333.5	Ic	79	Nga	20SC+ST-402
HW Vir	2456391.0170	*15	-0.0058	91334	B	56	Nga	20SC+ST-402
HW Vir	2456391.0170	*15	-0.0058	91334	Rc	332	Siz	35SC+ST-9E
HW Vir	2456391.0171	*1	-0.0057	91334	Ic	79	Nga	20SC+ST-402
HW Vir	2456391.0172	*15	-0.0056	91334	V	82	Nga	20SC+ST-402
HW Vir	2456391.0753	*1*15	-0.0059	91334.5	Ic	79	Nga	20SC+ST-402
HW Vir	2456391.0754	*1*15	-0.0058	91334.5	B	56	Nga	20SC+ST-402
HW Vir	2456391.0755	*1*15	-0.0057	91334.5	V	82	Nga	20SC+ST-402
HW Vir	2456391.0758	*1*15	-0.0054	91334.5	Rc	332	Siz	35SC+ST-9E
HW Vir	2456391.1338	*15	-0.0057	91335	Rc	332	Siz	35SC+ST-9E
HW Vir	2456391.1920	*1*15	-0.0059	91335.5	Rc	332	Siz	35SC+ST-9E

star	min.		O-C	E	color	n	obs.	inst.
HW Vir	2456391.2505	*15	-0.0057	91336	Rc	332	Siz	35SC+ST-9E
HW Vir	2456395.1021	*15	-0.0059	91369	B	654	Mdy	35SC+ST-10XME
HW Vir	2456395.1598	*1*15	-0.0066	91369.5	B	654	Mdy	35SC+ST-10XME
HW Vir	2456395.2188	*15	-0.0059	91370	B	654	Mdy	35SC+ST-10XME
HW Vir	2456395.2782	*1*15	-0.0049	91370.5	B	654	Mdy	35SC+ST-10XME
LU Vir	2456411.0034	*19	-0.1050	16070.5	Ic	94	Nga	10L+CV-04
MS Vir	2456416.1105	*20	-0.0653	25336	Ic	89	Nga	20SC+ST-402
MS Vir	2456416.1118	*20	-0.0640	25336	B	88	Nga	20SC+ST-402
MS Vir	2456416.1114	*20	-0.0644	25336	V	88	Nga	20SC+ST-402
PY Vir	2456390.0275	*1	+0.1250	14262	Ic	117	Nga	10L+CV-04
PY Vir	2456397.9635	*1	+0.1241	14287.5	V	87	Nga	20SC+ST-402
PY Vir	2456397.9642	*1	+0.1248	14287.5	Ic	88	Nga	20SC+ST-402
PY Vir	2456397.9643	*1	+0.1249	14287.5	B	87	Nga	20SC+ST-402
PY Vir	2456398.1254		+0.1304	14288	Ic	88	Nga	20SC+ST-402
ASAS022014-0252.0	2456579.1589	*31	-0.0097	7265.5	B	87	Nga	20SC+ST-402
ASAS022014-0252.0	2456579.1597	*31	-0.0089	7265.5	V	86	Nga	20SC+ST-402
ASAS022014-0252.0	2456620.9842	*1*31	-0.0997	8751.5	Ic	80	Nga	10L+CV-04
ASAS030027+0211.0	2456617.0960	*33	+0.0315	8744	Ic	73	Nga	20SC+ST-402
ASAS030027+0211.0	2456617.0973	*33	+0.0328	8744	V	73	Nga	20SC+ST-402
ASAS030027+0211.0	2456617.0986	*33	+0.0341	8744	B	72	Nga	20SC+ST-402
ASAS075545+2728.7	2456355.4414				V	116	Kai	28SC+ST-7XME
ASAS075545+2728.7	2456355.4455				Rc	116	Kai	28SC+ST-7XME
ASAS075545+2728.7	2456356.4252				V	130	Kai	28SC+ST-7XME
ASAS075545+2728.7	2456356.4264				Rc	130	Kai	28SC+ST-7XME
ASAS075545+2728.7	2456367.4028				V	121	Kai	28SC+ST-7XME
ASAS075545+2728.7	2456367.4032				Rc	121	Kai	28SC+ST-7XME
ASAS091109+2414.1	2456371.3714	*23	+0.0007	0	V	38	Kai	28SC+ST-7XME
ASAS091109+2414.1	2456371.3716	*23	+0.0009	0	Rc	40	Kai	28SC+ST-7XME
ASAS111707+0402.9	2456406.3508	*24	+0.0784	12830	V	30	Kai	28SC+ST-7XME
ASAS154756+1607.8	2456449.4666	*25	+0.1746	5155	V	49	Kai	28SC+ST-7XME
ASAS223112-0704.9	2456522.090	*27	+0.000	13691	Ic	63	Nga	10L+CV-04
ASAS223112-0704.9	2456523.1048	*27	-0.0037	13694	Ic	73	Nga	20SC+ST-402
ASAS223112-0704.9	2456523.1067	*27	-0.0018	13694	B	73	Nga	20SC+ST-402
ASAS223112-0704.9	2456523.1070	*27	-0.0015	13694	V	73	Nga	20SC+ST-402
ASAS230455-0255.2	2456565.0149	*30	-0.0155	8507	Ic	112	Nga	10L+CV-04

## Observers

Edm / Endo Masakatsu  
Hsk / Hirosawa Kenji  
Ioh / Itoh Hiroshi  
Kai / Kasai Kiyoshi  
Kis / Kiyota Seiichiro  
Mdy / Maeda Yutaka  
Nga / Nagai Kazuo  
Set / Chris Stephan  
Siz / Shiokawa Kazuhiko  
Ttm / Tanaka Takumi

## Remarks

- 1 secondary minimum
- 2 min=2448500.0343+0.431915xE (Hipparcos catalog)
- 3 min=2442776.961+1.199839xE (R.Dequinze, J.AAVSO 19,1990)
- 4 min=2452501.19+2.573744xE (J.M. Kreiner, 2004, AA54)
- 5 min=2452500.8069+1.777619xE (J.M.Kreiner,2004,AA54)
- 6 min=2448500.2213+0.677049xE (Hipparcos catalog)
- 7 min = 2447512.0677 + 3.9538047 x E (IBVS3410)
- 8 min=2451665.6526+4.5494840xE (IBVS4911)
- 9 min=2450122.48519+1.535114xE (IBVS4410)
- 10 min=2452500.31+6.13398xE (J.M. Kreiner, 2004, AA 54)
- 11 min=2450571.219+0.326890xE (IBVS 5021)
- 12 min=2451220.4869+0.351862xE (IBVS 4810)
- 13 min=2448791.310+14.39303xE (IBVS 5586)
- 14 min=2452500.0767+0.5174622xE (J.M. Kreiner, 2004, AA 54)
- 15 min=2445730.5565+0.116719582xE (Cakirli and Devlen (1999))
- 16 min=2451304.8686+0.53778xE (IBVS 5060)
- 17 min=2448500.163+0.407672xE (Hipparcos catalog)
- 18 min=2452056.3775+0.315408xE (IBVS5192)
- 19 min=2448500.453+0.492247xE (Hipparcos catalog)
- 20 min=2448500.196+0.31244xE (Hipparcos catalog)
- 21 min=2449922.7072+0.52947826xE (IBVS4284)
- 22 min=2451285.7006+0.51024xE (IBVS5060)
- 23 min=2456371.37073+0.3391757xE (K.Kasai 2013,AAVSO VSX)
- 24 min=2452039.12+0.340386xE (ASAS-3 catalog)
- 25 min=2452701.04+0.727110xE (ASAS-3 catalog)
- 26 min=2448500.516+0.52169xE (Hipparcos catalog)
- 27 min=2451872.900+0.339580xE (ASAS-3 catalog)
- 28 min=2448500.6671+0.866465xE (BAV Rbf. 52, 93ff)
- 29 min=2451886.073+0.308538xE (ASAS3 catalog)
- 30 min=2451875.972+0.551200xE (ASAS3 catalog)
- 31 min=2451904.11+0.64346xE (ASAS-3 catalog)
- 32 min=2448500.251+0.440794xE (Hipparcos catalog)
- 33 min=2451931.05+0.535912xE Hipparcos catalog)
- 24 min=2452500.914+2.237787xE (J.M. Kreiner, 2004, AA 54)
- 25 min=2452334.75+4.0385xE (IBVS5357)
- 26 min=2451501.10674970+0.5272429xE (IBVS4937)
- 27 min=2448500.6581+0.918235xE (Hipparcos catalog)
- 28 min=2448501.57+1.7622xE (Hipparcos catalog)
- 29 min=2451975.6040+0.4341474xE (IBVS5132)
- 30 min=2451869.89+0.84305xE (ASAS-3 catalog)
- 31 min=2448500.427+0.677128xE (Hipparcos catalog)
- 32 min=2452500.4447+0.79286616xE (J.M.Kreiner,2004,AA54)
- 33 min=2448500.1684+0.731384xE (Hipparcos catalog)

cG magnitude means G plane of DSLR camera.

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VSOLJ

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Publishing Masahiko Momose

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