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New Mira variables from the MACHO Galactic Bulge Fields

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Abstract: 500 new Mira variables in the direction of the Galactic Bulge are presented, which were found in the MACHO database.

500 previously unrecorded Mira variables were found during an inspection of R-band lightcurves from the MACHO Galactic Bulge fields (http://macho.anu.edu.au/). This research continues the search for new Miras in the MACHO database (Bernhard 2011).

The MACHO 1.3 m telescope is situated at Mount Stromlo in Australia and uses B and R filters in combination with eight 2048*2048 CCD cameras. Calculation of MACHO R magnitudes was done from the given instrumental R magnitudes using the formula given in Alcock et al. (1999). Astrometric positions and near-infrared color indices were derived from the 2MASS catalog (Skrutskie et al. 2006).

Only objects with an amplitude > 2 mag (Rc) were taken into consideration. In addition, all lightcurves have been inspected visually; objects with significant changes in amplitude, mean magnitude and / or period suggesting semi-regularity have been rejected. Each object was checked against the Strasbourg CDS Vizier service and the International Variable Star Index (VSX) for pre-existence as a Mira-type star in variability catalogues.

Summary data for all new Mira variables are listed in Table 1. (:) denotes uncertain value.
Lightcurves, folded lightcurves and further details are available via AAVSO-VSX (http://www.aavso.org/vsx/).

1. Period distribution

The present sample encompasses Miras with periods between 94 and 592 days. With a peak at 251-300 days, the distribution of periods (figure 1) is in agreement with results from the OGLE-II survey of the Galactic Bulge (Groenewagen & Blommaert 2005).

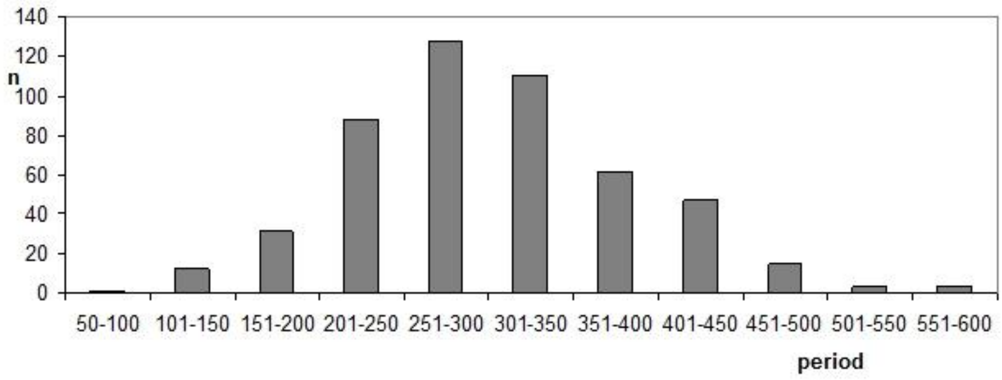


Figure 1: Period distribution of the new Mira variables

2. Colour-Colour diagram and log(P)-Colour diagram

Assuming an interstellar extinction of A_K ~ 0.3 mag for our fields similar to those values for other Bulge fields given in Matsunaga et al. (2005), the H-Ks vs. Ks diagram of our objects fits well to the corresponding diagram of OGLE-II Miras.

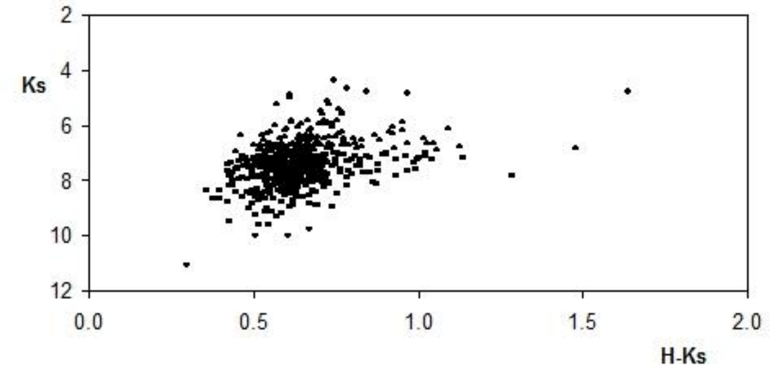


Figure 2: 2MASS (H-Ks) vs. Ks diagram

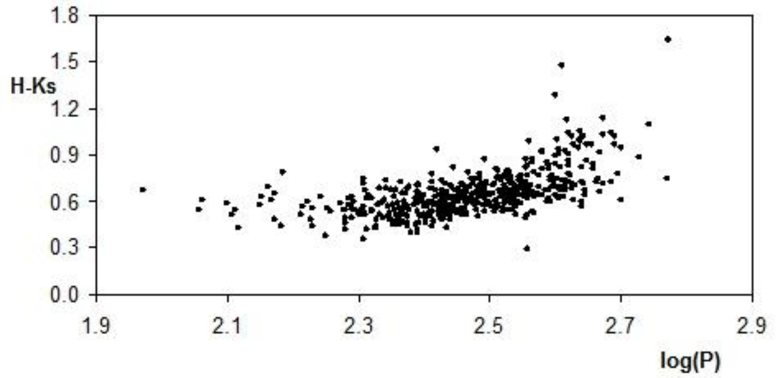


Figure 3: log(P) vs 2MASS H-Ks diagram

This holds true also for the log(P) vs 2MASS H-Ks diagram. Miras with longer periods tend to have larger H-Ks values.

The Mira with the largest H-Ks (1.639) – MACHO 305.35072.100 (RA 18 14 30.72, DEC -21 38 28.3; 15.1-19.3 Rc) – has also the longest period of the sample (592 d) and is listed in Sevenster et al. (2001) as an OH maser source.

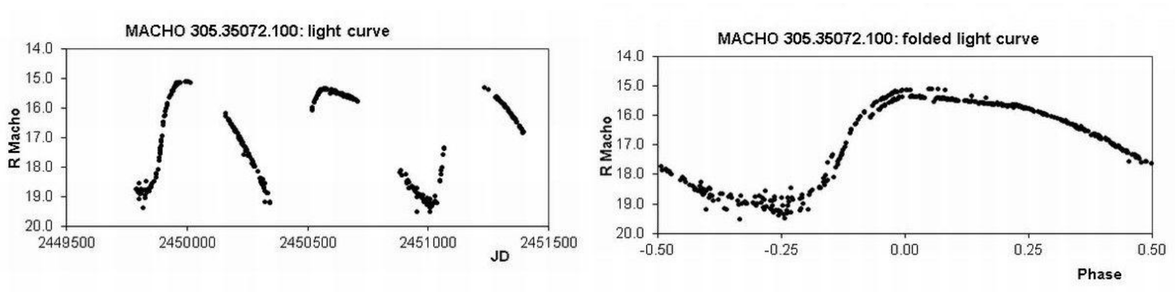


Figure 4: Lightcurve and folded lightcurve of MACHO 305.35072.100

3. Lightcurve parameters

Mira lightcurves come in a variety of shapes. While most Miras exhibit more or less symmetrical lightcurves, there are also objects displaying a clear asymmetry between rising and descending branch. This holds true for the present sample: Most Miras show symmetrical lightcurves with a ratio of rise time over period of 0.4 to 0.5 (e.g. Lebzelter 2011).

The following graphic gives examples of symmetrical lightcurves (MACHO 128.22058.29, P=235 d; MACHO 120.21270.120, P=284 d) and asymmetrical ones (MACHO 120.21911.3444, P=393.5 d; MACHO 179.21713.1283, P=483 d). Note the bump on the ascending branch of the last object.

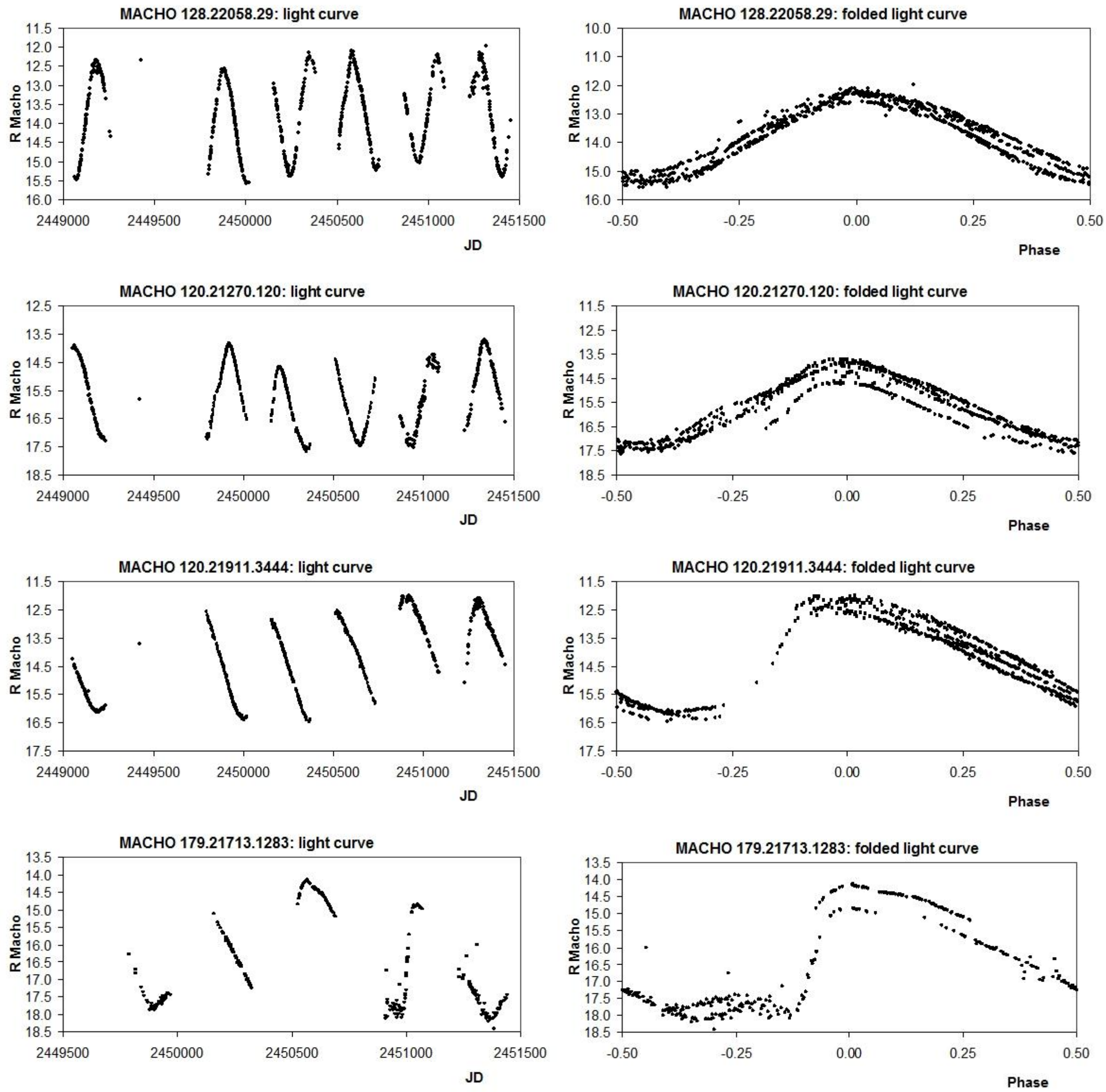


Figure 5: Sample lightcurves of Miras with asymmetric and symmetric lightcurve shapes

Furthermore, some Miras exhibit bumps on their rising (or sometimes falling) branches, which may be of transient nature and need not necessarily repeat every cycle. This phenomenon is particularly common among Miras of longer period. In fact, in an analysis of the shape of the visual lightcurves of 312 M-type Miras, Vardya (1988) finds no humps in the lightcurves of objects with a period of P ≤ 300 d (see his figure 3 on p. 183 l.c.). In general, we can confirm this finding in the present sample. However, there are also a few stars showing slight bumps whose periods are shorter than 300 d, e.g. MACHO 159.25878.23 (P=190 d).

The following graphic gives examples of Miras exhibiting bumps on their ascending branches (MACHO 161.24309.62; P=554 d, MACHO 176.18832.15; P=380 d, MACHO 159.25878.23; P=190 d). Note the variable shape of the bump in the second object's lightcurve.

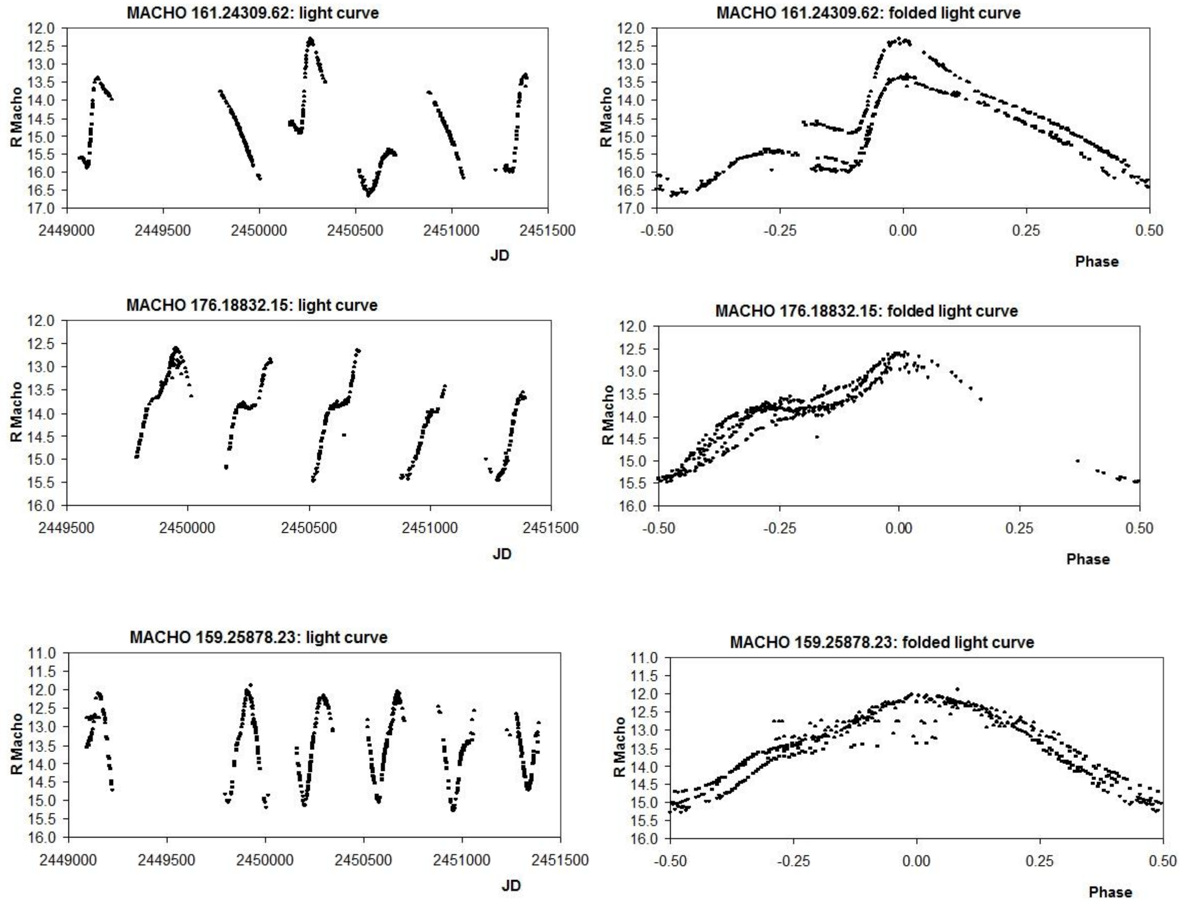


Figure 6: Sample lightcurves of Miras with bumps on their ascending branches

In addition, some Miras show strong changes in amplitude. The difference between consecutive maxima might amount to several magnitudes. In the case of MACHO 120.21789.114, the difference between the highest maximum at around JD 2450210 and the lowest maximum at around JD 2451290 is a respectable 2.6 mag (Rc).

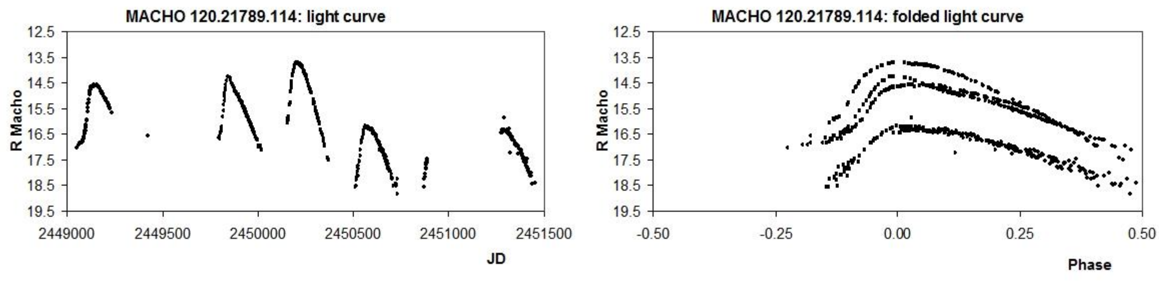
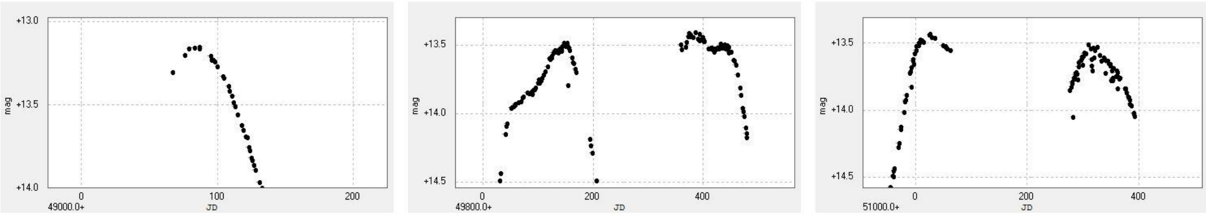
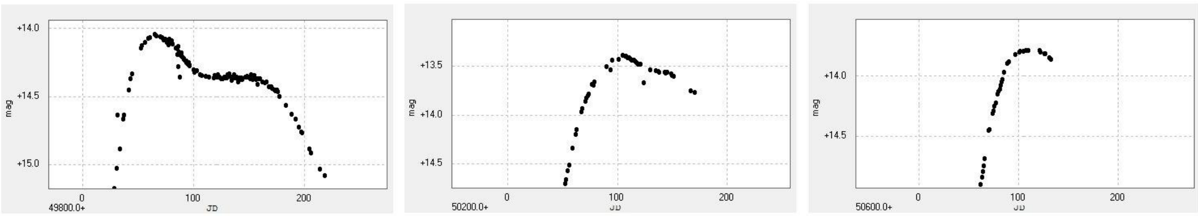


Figure 7: Sample lightcurve of a Mira displaying strong changes in amplitude

Generally speaking, the lightcurve form may vary considerably from cycle to cycle. Some examples of the varying shape of maxima are given below:



MACHO 161.24828.47; P=276 d



MACHO 120.21658.37; P=418 d

Figure 8: Sample lightcurves of Miras with considerably varying maxima shapes

Table 1: Positions, identifications and photometric data for the new Mira stars

No.	MACHO	other	RA DEC (2000)						Range(MACHO R)	Epoch(Max)	Per.(d)
1	118.17884.219	VSX J175804.7-294748	17	58	4.75	-29	47	48.6	12.6-17.3	2451377	142.2
2	118.18011.25	VSX J175828.8-300117	17	58	28.85	-30	1	17.7	13.2-16.4	2451007	459.8
3	118.18145.99	VSX J175839.2-294506	17	58	39.26	-29	45	6.1	13.6-16.8	2450881	335.7
4	118.18141.12	VSX J175842.5-300146	17	58	42.57	-30	1	46.3	11.9-16.1	2451367	248.5
5	118.18271.397	VSX J175857.3-300030	17	58	57.34	-30	0	30.4	13.3-18.0	2451375	340.5
6	118.18402.42	VSX J175911.6-295705	17	59	11.65	-29	57	5.5	13.5-<16.5	2451307	310.5
7	118.18404.394	VSX J175917.1-294929	17	59	17.14	-29	49	29.0	13.4-16.9	2450918	309.6
8	113.18551.44	VSX J175940.2-284146	17	59	40.29	-28	41	46.4	11.4-15.7	2451376	209.4
9	176.18565.1	VSX J175943.1-274419	17	59	43.1	-27	44	19.4	13.7-18.0:	2450924	263
10	108.18553.116	VSX J175943.1-283257	17	59	43.16	-28	32	57.1	12.0-15.3	2451327	202.1
11	118.18661.59	VSX J175944.2-300311	17	59	44.22	-30	3	11.0	13.4-16.4	2450194	343.4
12	108.18690.29	VSX J175944.6-280702	17	59	44.63	-28	7	2.3	13.2-16.5	2451225	230.8
13	108.18688.36	VSX J175948.5-281244	17	59	48.53	-28	12	44.1	12.6-16.6	2451310	266.5
14	118.18662.426	VSX J175949.0-295555	17	59	49.04	-29	55	55.5	13.8-<17.0	2451292	344.9
15	176.18694.1121	VSX J175949.3-274929	17	59	49.37	-27	49	29.3	15.1-19.0:	2450635	438
16	118.18664.475	VSX J175950.9-294944	17	59	50.99	-29	49	44.9	12.9-17.1	2451279	220.7
17	118.18670.21	VSX J175955.4-292646	17	59	55.41	-29	26	46.3	11.6-<15.7	2450544	292.7
18	108.18691.45	V4689 Sgr	17	59	59.31	-28	3	19.8	11.9-16.1	2451278	261.9
19	118.18669.254	VSX J175959.8-293105	17	59	59.87	-29	31	5.3	13.0-16.2	2450566	219.9
20	176.18697.699	VSX J180000.4-273823	18	0	0.4	-27	38	23.5	14.0-17.4	2450594	277
21	108.18689.118	VSX J180000.6-280929	18	0	0.68	-28	9	29.0	13.1-16.1	2451265	244.4
22	176.18696.75	VSX J180001.3-273946	18	0	1.35	-27	39	46.6	12.1-15.7	2450244	232
23	176.18823.85	VSX J180005.5-275405	18	0	5.51	-27	54	5.5	13.1-16.1	2450608	219
24	118.18798.54	VSX J180005.8-293206	18	0	5.8	-29	32	6.5	13.0-<16.7	2450540	355
25	108.18821.429	VSX J180008.5-280127	18	0	8.52	-28	1	27.5	13.8-18.1	2451428	368.2
26	108.18814.447	VSX J180009.2-283033	18	0	9.26	-28	30	33.3	12.0-16.3	2451358	352.7
27	118.18790.15	VSX J180010.3-300606	18	0	10.37	-30	6	6.6	12.6-15.8	2451370	224.7
28	176.18832.15	VSX J180012.0-271905	18	0	12.09	-27	19	5.7	12.6-15.5	2450330	380
29	108.18817.863	VSX J180014.6-281655	18	0	14.69	-28	16	55.9	14.5-18.5:	2451396	360.4
30	176.18822.24	VSX J180015.9-275551	18	0	15.95	-27	55	51.2	14.5-18.3	2451028	163
31	118.18798.221	VSX J180016.6-293527	18	0	16.63	-29	35	27.3	13.3-16.3	2451415	297
32	108.18816.45	VSX J180017.6-282026	18	0	17.64	-28	20	26.3	12.6-16.7	2449433	337
33	108.18948.14	Mis V0490	18	0	20.9	-28	13	37.1	11.5:-<13.9	2451295	342
34	176.18960.317	VSX J180020.9-272431	18	0	20.99	-27	24	31.1	>12.9-16.5	2450972	236
35	108.18949.47	VSX J180024.2-280857	18	0	24.23	-28	8	57.6	12.5-15.9	2451307	259.3
36	118.18926.32	VSX J180029.2-294147	18	0	29.21	-29	41	47.4	13.4-16.6	2450588	291.5
37	118.18923.209	VSX J180029.5-295431	18	0	29.59	-29	54	31.8	12.4-16.4	2450177	320.5
38	176.18960.146	V4694 Sgr	18	0	30.37	-27	23	46.3	12.7-16.4	2450980	298
39	118.18928.209	VSX J180031.2-293347	18	0	31.21	-29	33	47.4	14.3-<17.3	2450616	230
40	108.18948.200	Mis V0542	18	0	33.61	-28	11	56.6	11.8-16.1	2450605	265.3
41	176.18960.241	VSX J180034.6-272358	18	0	34.6	-27	23	58.5	14.1-<17.1	2451325	335
42	176.19089.58	VSX J180039.0-273042	18	0	39.04	-27	30	42.2	13.7-16.9	2450525	311
43	108.19078.306	VSX J180043.2-281425	18	0	43.27	-28	14	25.4	14.5-<19.0	2451276	369.1
44	176.19083.434	VSX J180043.5-275331	18	0	43.59	-27	53	31.1	>14.0-16.9	2451305	393
45	108.19074.30	VSX J180044.8-283114	18	0	44.86	-28	31	14.9	12.5-<16.4	2451358	375.2
46	176.19086.310	VSX J180045.4-274312	18	0	45.4	-27	43	12.7	11.8-15.8	2451241	247
47	176.19083.306	VSX J180048.0-275453	18	0	48.06	-27	54	53.8	12.2-15.8	2451333	170
48	108.19079.25	Mis V0348	18	0	52.4	-28	10	52.1	12.0-15.7	2451245	163.8
49	176.19086.157	VSX J180054.3-274310	18	0	54.35	-27	43	10.2	>11.8-15.5	2451290	189
50	176.19215.30	VSX J180058.6-274352	18	0	58.69	-27	43	52.5	12.9-16.2	2450943	268
51	108.19202.5187	VSX J180059.0-283638	18	0	59.02	-28	36	38.1	11.7-<15.9	2451309	222.4
52	108.19210.727	VSX J180059.8-280602	18	0	59.88	-28	6	2.3	12.8-16.5	2451365	343.5
53	176.19216.505	Mis V0871	18	1	6.48	-27	41	24.5	11.6:-16.5	2450533	255
54	108.19207.3456	VSX J180108.9-281911	18	1	8.92	-28	19	11.2	12.6-<15.9	2451421	220.9
55	108.19208.317	VSX J180109.9-281420	18	1	9.97	-28	14	20.1	13.8-17.0	2451299	301.2
56	113.19192.698	VSX J180114.1-291812	18	1	14.11	-29	18	12.2	14.0-17.5	2451313	339.9
57	176.19349.5049	VSX J180115.1-272934	18	1	15.17	-27	29	34.1	12.3-16.9	2451014	309
58	108.19462.5386	VSX J180135.8-283710	18	1	35.81	-28	37	10.1	13.6-<16.8	2451341	343.9
59	176.19478.42	VSX J180139.6-273201	18	1	39.64	-27	32	1.1	13.8-17.2	2451305	94
60	108.19466.84	VSX J180142.8-282110	18	1	42.87	-28	21	10.7	13.7-16.5	2451330	246
61	113.19584.81	VSX J180153.1-290957	18	1	53.18	-29	9	57.8	12.5-<16.4	2451255	344.1
62	176.19604.7	VSX J180154.6-274857	18	1	54.6	-27	48	57.6	12.3-15.8	2451303	181
63	108.19601.121	VSX J180203.2-275946	18	2	3.26	-27	59	46.3	11.6-16.0	2451421	237.9
64	176.19607.34	VSX J180205.4-273645	18	2	5.44	-27	36	45.6	13.1-16.5	2451233	270
65	108.19600.34	VSX J180205.6-280401	18	2	5.67	-28	4	1.2	12.6-17.4	2451299	311.1
66	114.19580.1183	VSX J180208.8-292437	18	2	8.83	-29	24	37.8	13.8-18.1	2451344	192.6
67	114.19710.19	VSX J180220.4-292654	18	2	20.45	-29	26	54.9	11.8-16.8	2451313	274.8
68	176.19737.24	VSX J180221.5-273812	18	2	21.51	-27	38	12.7	12.9-17.6	2451332	292
69	114.19846.60	VSX J180230.0-290055	18	2	30.09	-29	0	55.4	11.9-<15.7	2451308	301.4
70	114.19842.460	VSX J180233.9-291843	18	2	33.95	-29	18	43.9	12.4-16.3	2450940	279.3
71	114.19843.30	VSX J180242.7-291412	18	2	42.75	-29	14	12.4	12.9-17.3	2451361	202.6
72	176.19996.10	VSX J180249.1-274327	18	2	49.11	-27	43	27.7	12.2-16.0	2451284	230
73	176.19998.2804	VSX J180253.1-273515	18	2	53.1	-27	35	15.9	12.7-<16.5	2450940	269
74	114.19970.39	VSX J180255.1-292502	18	2	55.17	-29	25	2.9	13.4-16.8	2451279	359.8
75	104.19997.944	VSX J180257.2-273801	18	2	57.21	-27	38	1.2	13.3-17.4	2450882	326
76	104.19990.3784	Mis V0557	18	3	0.43	-28	4	42.5	11.2-15.8	2451433	324.9
77	114.19972.22	VSX J180301.9-291641	18	3	1.99	-29	16	41.6	12.8-16.3	2450147	349.5
78	114.20099.104	VSX J180305.7-293039	18	3	5.79	-29	30	39.1	13.5-<17.1	2451246	347.3

79	104.20125.3952	VSX J180305.8-274738	18	3	5.84	-27	47	38.0	12.5-16.7	2450555	348
80	109.20112.20	VSX J180308.4-283858	18	3	8.45	-28	38	58.7	12.4-16.0	2451353	441.3
81	104.20120.3904	VSX J180310.7-280436	18	3	10.78	-28	4	36.6	14.4-17.1	2451383	281
82	104.20127.80	V4718 Sgr	18	3	11.53	-27	39	33.7	11.8-15.7	2450645	228
83	109.20111.35	VSX J180320.3-284054	18	3	20.37	-28	40	54.3	11.4-<15.8	2451326	272.2
84	114.20105.26	VSX J180321.2-290729	18	3	21.22	-29	7	29.5	11.3-15.4	2449799	308
85	104.20252.601	VSX J180328.4-275702	18	3	28.45	-27	57	2.1	12.4-<16.8	2451002	412.5
86	104.20259.397	VSX J180331.2-272913	18	3	31.27	-27	29	13.3	14.0-17.1	2450159	311.6
87	104.20253.823	VSX J180334.8-275230	18	3	34.84	-27	52	30.2	14.0-17.9	2451414	415.3
88	104.20258.150	VSX J180335.7-273436	18	3	35.72	-27	34	36.4	12.7-16.8	2451310	205.5
89	114.20364.1681	VSX J180344.0-290937	18	3	44.05	-29	9	37.5	11.8-16.2	2451010	421
90	104.20388.55	VSX J180344.9-273523	18	3	44.93	-27	35	23.9	12.3-<15.4	2450887	339.6
91	104.20384.47	VSX J180349.4-274847	18	3	49.47	-27	48	47.9	12.3-15.6	2451406	290.5
92	114.20361.242	VSX J180350.7-292030	18	3	50.74	-29	20	30.2	14.2-17.0	2451253	361.5
93	109.20379.23	VSX J180355.4-280835	18	3	55.46	-28	8	35.6	13.0-16.6	2450171	339.3
94	104.20383.105	VSX J180356.6-275327	18	3	56.6	-27	53	27.7	12.0-15.4	2450991	214
95	101.20657.184	VSX J180420.1-265830	18	4	20.11	-26	58	30.0	14.2-17.4	2451443	322.8
96	101.20657.661	VSX J180426.0-265555	18	4	26.07	-26	55	55.0	14.2-17.2	2450707	432.5
97	101.20656.79	VSX J180427.8-270257	18	4	27.85	-27	2	57.1	12.7-<15.7	2451300	373.8
98	101.20787.3121	VSX J180442.4-265901	18	4	42.47	-26	59	1.6	15.5-19.6	2451085	362.5
99	104.20900.3964	VSX J180457.9-280450	18	4	57.92	-28	4	50.5	11.6-15.5	2450916	338.3
100	104.21031.37	VSX J180513.2-280222	18	5	13.27	-28	2	22.8	11.7-<15.3	2451276	366
101	104.21034.92	V4719 Sgr	18	5	29.5	-27	48	21.6	12.5-15.9	2451333	322.5
102	105.21167.4999	VSX J180538.1-273857	18	5	38.11	-27	38	57.9	11.5-14.2	2450565	322
103	105.21290.5708	VSX J180549.1-280556	18	5	49.11	-28	5	56.3	11.0:-<14.8	2450915	211.5
104	120.21271.5	VSX J180549.1-292313	18	5	49.14	-29	23	13.3	12.5-16.3	2451370	330
105	128.21280.376	VSX J180554.7-284616	18	5	54.75	-28	46	16.4	>12.6-16.1	2451360	413
106	101.21301.33	VSX J180555.0-272337	18	5	55.08	-27	23	37.3	13.2-16.8	2451290	268.7
107	120.21270.120	VSX J180558.5-292724	18	5	58.57	-29	27	24.0	13.7-17.6	2451341	284
108	128.21277.19	VSX J180601.3-285811	18	6	1.38	-28	58	11.3	11.3:-15.55	2450245	275
109	105.21288.93	VSX J180601.6-281206	18	6	1.61	-28	12	6.8	>11.4-15.8	2451242	277
110	105.21289.1313	VSX J180603.5-281137	18	6	3.52	-28	11	37.1	13.9-16.5	2451402	319.7
111	105.21296.4066	VSX J180603.8-274214	18	6	3.85	-27	42	14.9	>11.3-14.6	2451318	205.5
112	120.21400.10	VSX J180608.1-292706	18	6	8.1	-29	27	6.9	11.6:-<15.5	2451235	359
113	105.21421.906	VSX J180608.9-280221	18	6	8.94	-28	2	21.5	>13.3-15.6	2451247	248
114	128.21411.21	VSX J180611.0-284148	18	6	11.02	-28	41	48.2	13.2-17.0	2451277	239
115	101.21428.257	VSX J180615.1-273441	18	6	15.1	-27	34	41.9	12.6-16.9	2450360	385.4
116	101.21430.42	VSX J180615.1-272453	18	6	15.18	-27	24	53.7	12.9-17.2	2451363	314.5
117	120.21392.733	VSX J180615.3-295819	18	6	15.37	-29	58	19.4	13.6-17.7	2451350	404
118	128.21413.122	VSX J180617.2-283506	18	6	17.21	-28	35	6.3	14.3-<17.9	2451345	370
119	128.21406.11	VSX J180623.5-290153	18	6	23.52	-29	1	53.1	>12.2-15.5	2450172	353
120	121.21388.17	VSX J180624.3-301228	18	6	24.38	-30	12	28.5	12.9:-<15.8	2451295	325
121	179.21578.107	VSX J180626.0-261510	18	6	26.05	-26	15	10.8	>14.9-18.7	2450663	401
122	101.21559.160	Mis V0078	18	6	26.56	-27	29	22.1	13.1-16.5	2451278	272.4
123	179.21577.188	VSX J180626.8-261815	18	6	26.89	-26	18	15.3	13.0-16.7	2451003	260
124	101.21566.247	VSX J180627.9-270241	18	6	27.99	-27	2	41.2	14.3-16.3	2451365	304.5
125	179.21583.211	VSX J180629.5-255419	18	6	29.53	-25	54	19.4	13.0-16.5	2451000	320
126	121.21512.128	VSX J180629.9-303842	18	6	29.96	-30	38	42.4	12.9:-<16.4	2450215	253
127	101.21560.1136	VSX J180630.4-272459	18	6	30.43	-27	24	59.4	13.6-<17.5	2450520	306
128	101.21561.111	VSX J180630.9-272125	18	6	30.9	-27	21	25.5	13.9-15.9	2450910	283
129	124.21509.244	VSX J180631.5-304859	18	6	31.51	-30	48	59.9	12.9-15.8	2451314	337
130	120.21529.289	VSX J180632.0-292919	18	6	32.04	-29	29	19.8	11.5-16.3	2451348	346
131	120.21522.38	VSX J180633.5-295613	18	6	33.5	-29	56	13.4	13.4-<16.6	2451243	364
132	179.21577.41	VSX J180635.8-261632	18	6	35.8	-26	16	32.8	13.3-16.2	2450992	228
133	128.21537.666	VSX J180638.2-285638	18	6	38.29	-28	56	38.2	14.1-17.9	2451321	391
134	120.21523.37	VSX J180639.7-295240	18	6	39.74	-29	52	40.8	12.6-16.6	2450851	355
135	120.21523.14	VSX J180640.4-295403	18	6	40.45	-29	54	3.6	11.6-15.9	2450550	283
136	128.21540.15	VSX J180642.8-284644	18	6	42.88	-28	46	44.6	12.5-16.8	2451282	216
137	128.21541.55	VSX J180643.2-284315	18	6	43.24	-28	43	15.4	13.4-17.1:	2451415	375
138	179.21711.253	VSX J180645.9-260232	18	6	45.95	-26	2	32.6	14.0-<16.5	2451422	203
139	128.21664.379	VSX J180646.2-290915	18	6	46.25	-29	9	15.3	12.7-16.6	2450544	263
140	179.21713.1283	VSX J180648.3-255455	18	6	48.36	-25	54	55.1	14.1-18.2	2451045	483
141	105.21681.221	VSX J180650.0-280203	18	6	50.05	-28	2	3.2	15.0-19.0	2451413	193.1
142	105.21680.48	VSX J180654.2-280558	18	6	54.2	-28	5	58.0	14.2-16.8	2451251	350.7
143	120.21656.31	VSX J180657.5-294131	18	6	57.52	-29	41	31.6	12.0-16.3	2450547	303.5
144	120.21658.37	VSX J180657.7-293529	18	6	57.75	-29	35	29.0	13.4-16.8:	2450709	418
145	124.21635.150	VSX J180659.2-310400	18	6	59.2	-31	4	0.1	13.8:-<17.5	2451278	455
146	105.21686.99	VSX J180700.9-274315	18	7	0.94	-27	43	15.1	13.9-17.8	2450940	258.8
147	128.21672.359	VSX J180701.8-283726	18	7	1.84	-28	37	26.9	12.3-16.8	2450594	422
148	179.21838.643	VSX J180702.5-261433	18	7	2.53	-26	14	33.1	13.6-17.6	2450600	204
149	121.21771.188	VSX J180703.2-304130	18	7	3.2	-30	41	30.3	14.3-<16.8	2451350	364
150	105.21816.2641	VSX J180704.8-274310	18	7	4.88	-27	43	10.2	14.7-<18.9	2451443	399.2
151	124.21767.9	VSX J180705.0-305651	18	7	5.07	-30	56	51.3	12.2:-15.5	2450995	234.5
152	120.21789.114	VSX J180705.3-292745	18	7	5.32	-29	27	45.9	13.7-<18.9	2450205	358
153	128.21794.49	VSX J180707.4-291125	18	7	7.4	-29	11	25.8	14.0-17.3:	2450355	423
154	179.21837.60	VSX J180707.6-261803	18	7	7.68	-26	18	3.2	14.3-17.0	2451388	293
155	124.21766.19	VSX J180709.2-310304	18	7	9.28	-31	3	4.2	13.2-<16.6	2451001	373
156	120.21788.805	VSX J180710.4-293328	18	7	10.48	-29	33	28.2	13.3-17.2	2451287	286
157	121.21771.27	VSX J180711.1-303944	18	7	11.19	-30	39	44.3	12.8:-16.2	2451352	316
158	124.21761.161	VSX J180711.2-312050	18	7	11.26	-31	20	50.9	11.7-15.7	2450987	292
159	120.21780.5400	VSX J180711.8-300418	18	7	11.83	-30	4	18.4	12.6-<16.1	2451290	361
160	105.21812.3179	VSX J180714.4-275917	18	7	14.48	-27	59	17.1	13.0-<17.1	2451352	361.2

161	179.21845.11	VSX J180717.4-254548	18	7	17.46	-25	45	48.8	12.5-<16.4	2450577	167
162	179.21967.17	VSX J180720.5-261936	18	7	20.57	-26	19	36.7	12.8-18.2	2450292	437
163	179.21973.84	VSX J180721.3-255402	18	7	21.35	-25	54	2.8	13.5-17.1	2449928	388
164	128.21926.71	VSX J180723.8-290309	18	7	23.89	-29	3	9.5	11.7:-15.5	2450900	212
165	124.21890.206	VSX J180723.9-312448	18	7	23.93	-31	24	48.0	13.2-17.5	2450660	114.4
166	179.21974.79	VSX J180724.8-254746	18	7	24.86	-25	47	46.8	13.7-17.6	2451389	368
167	128.21931.22	VSX J180725.5-284155	18	7	25.59	-28	41	55.7	12.3-15.9	2450672	264
168	179.21974.25	VSX J180725.8-254832	18	7	25.8	-25	48	32.7	13.9-17.2:	2451369	250
169	128.21923.70	VSX J180726.4-291328	18	7	26.41	-29	13	28.7	13.3-17.1:	2450394	470
170	105.21941.158	VSX J180731.6-280027	18	7	31.69	-28	0	27.2	12.1-16.2	2450344	379.3
171	105.21937.567	VSX J180731.8-281811	18	7	31.87	-28	18	11.2	13.6-17.1	2451384	220.6
172	124.21895.2502	VSX J180732.1-310724	18	7	32.16	-31	7	24.1	11.9-16.25	2450642	281
173	124.21899.20	VSX J180734.2-304919	18	7	34.28	-30	49	19.2	12.5:-16.3	2450545	290
174	105.21938.208	VSX J180734.7-281238	18	7	34.74	-28	12	38.7	14.5-18.0	2450889	360.9
175	120.21916.533	VSX J180735.8-294342	18	7	35.8	-29	43	42.5	12.7-16.4:	2450628	330.5
176	120.21911.3444	VSX J180735.9-300135	18	7	35.99	-30	1	35.8	12.0-16.4	2451307	393.5
177	179.22097.4	VSX J180739.8-261929	18	7	39.86	-26	19	29.1	12.0-15.4	2451248	222
178	128.22062.312	VSX J180741.0-283735	18	7	41.07	-28	37	35.6	13.0-16.7	2450541	398
179	179.22100.3101	VSX J180741.1-260510	18	7	41.15	-26	5	10.9	12.2-15.9	2450555	290
180	121.22039.84	VSX J180742.4-301123	18	7	42.49	-30	11	23.0	>12.3-<15.7	2451310	204.5
181	179.22103.108	VSX J180749.1-255236	18	7	49.18	-25	52	36.9	14.0-16.6	2450586	273
182	124.22020.31	VSX J180749.6-312638	18	7	49.6	-31	26	38.7	13.0-<15.8	2451357	367
183	128.22058.29	VSX J180753.4-285428	18	7	53.47	-28	54	28.9	12.1-15.6	2450583	235
184	179.22100.347	VSX J180755.6-260409	18	7	55.63	-26	4	9.0	14.3-17.7	2451310	405
185	124.22020.4	VSX J180755.6-312704	18	7	55.67	-31	27	4.8	10.9:-14.7	2450935	254
186	179.22101.302	VSX J180755.8-260131	18	7	55.88	-26	1	31.5	14.3-17.8	2450645	287
187	105.22075.43	VSX J180756.1-274733	18	7	56.18	-27	47	33.4	13.3-16.8	2450740	399
188	180.22118.192	VSX J180756.2-245534	18	7	56.22	-24	55	34.9	14.0-17.1	2451278	314
189	180.22114.914	VSX J180756.3-251113	18	7	56.35	-25	11	13.3	14.5-17.6	2451436	217
190	179.22229.457	VSX J180758.3-260924	18	7	58.34	-26	9	24.7	>13.9-16.8	2450613	299
191	105.22198.22	VSX J180800.6-281501	18	8	0.62	-28	15	1.0	13.1-17.0	2451265	304.6
192	179.22235.21	VSX J180802.9-254624	18	8	2.98	-25	46	24.7	13.1-<17.0	2451409	306
193	179.22226.46	VSX J180808.2-261959	18	8	8.21	-26	19	59.9	12.8-<16.7	2450930	331
194	105.22198.198	VSX J180808.6-281413	18	8	8.62	-28	14	13.3	14.1-<18.7	2451060	469.2
195	110.22192.24	VSX J180809.8-283625	18	8	9.8	-28	36	25.3	12.2-15.5	2451384	279.1
196	121.22163.1142	VSX J180812.1-303210	18	8	12.19	-30	32	10.7	11.5:-<15.7	2450959	276
197	110.22191.33	VSX J180812.5-284229	18	8	12.54	-28	42	29.2	13.7-17.1	2451321	437.2
198	110.22187.363	VSX J180812.5-285701	18	8	12.56	-28	57	1.7	14.5-17.4	2451420	402.4
199	105.22198.110	VSX J180812.9-281340	18	8	12.91	-28	13	40.9	11.2:-15.1:	2450956	282
200	180.22369.1629	VSX J180815.8-253054	18	8	15.84	-25	30	54.9	14.8-18.8:	2451293	312
201	120.22302.3043	VSX J180818.5-295818	18	8	18.55	-29	58	18.2	11.4:-15.9	2451243	330
202	105.22328.156	VSX J180819.8-281459	18	8	19.83	-28	14	59.0	14.4-<17.5	2451265	358.7
203	110.22318.407	VSX J180821.3-285309	18	8	21.38	-28	53	9.1	12.7-<16.6	2451351	195
204	179.22357.30	VSX J180822.2-261640	18	8	22.27	-26	16	40.6	13.2-16.8	2450159	335
205	180.22369.104	VSX J180828.8-253054	18	8	28.85	-25	30	54.1	12.9-16.0	2451433	275
206	180.22374.34	VSX J180829.4-250811	18	8	29.45	-25	8	11.0	13.7-17.7	2451405	153.5
207	180.22372.83	VSX J180830.0-251939	18	8	30.06	-25	19	39.8	13.7-16.6	2451409	229
208	105.22328.112	VSX J180830.5-281500	18	8	30.5	-28	15	0.7	13.4-<17.2	2451319	373.1
209	110.22324.14	VSX J180832.9-282936	18	8	32.96	-28	29	36.6	11.2-15.8	2451422	233.5
210	110.22448.730	VSX J180833.6-285226	18	8	33.66	-28	52	26.9	13.5-17.2	2450983	251.9
211	110.22448.51	VSX J180835.3-285150	18	8	35.39	-28	51	50.3	12.2-<16.3	2451350	328
212	180.22509.33	VSX J180836.3-244906	18	8	36.39	-24	49	6.7	13.7-17.6:	2450253	490
213	115.22434.21	VSX J180838.6-294744	18	8	38.69	-29	47	44.1	11.1-15.2	2451337	215.5
214	124.22418.9	VSX J180838.8-305423	18	8	38.87	-30	54	23.0	11.8:-15.2:	2450220	265
215	105.22457.32	VSX J180840.0-281832	18	8	40.00	-28	18	32.9	>11.8-15.5	2451006	194
216	124.22412.58	VSX J180840.1-311609	18	8	40.11	-31	16	9.5	12.9:-<16.1	2451255	365
217	115.22442.39	VSX J180840.2-291704	18	8	40.25	-29	17	4.0	13.9-16.9	2449917	412
218	115.22440.464	VSX J180840.9-292425	18	8	40.96	-29	24	25.2	12.8-<16.5	2451337	403
219	124.22412.172	VSX J180841.0-311942	18	8	41.09	-31	19	42.3	12.6-<16.25	2451325	353
220	102.22470.74	VSX J180843.4-272642	18	8	43.47	-27	26	42.4	12.6-15.8	2450555	332.6
221	121.22427.184	VSX J180845.3-301611	18	8	45.36	-30	16	11.6	14.3-<18.1	2450554	245
222	115.22439.272	VSX J180846.0-292849	18	8	46.09	-29	28	49.3	>11.9-15.7	2450957	217.2
223	180.22502.150	VSX J180847.7-251937	18	8	47.7	-25	19	37.6	>13.3-17.7	2450604	433
224	179.22617.69	VSX J180855.0-261835	18	8	55.09	-26	18	35.8	12.7-16.5	2451414	262
225	121.22552.40	VSX J180857.1-303848	18	8	57.19	-30	38	48.1	12.3-16.1:	2451367	437
226	115.22566.34	VSX J180858.3-294042	18	8	58.37	-29	40	42.8	11.1-15.0	2450526	335
227	110.22575.28	VSX J180859.2-290630	18	8	59.25	-29	6	30.0	12.7-16.0	2451363	276.5
228	115.22562.41	VSX J180903.1-295653	18	9	3.16	-29	56	53.8	13.9-16.0	2451299	246.5
229	179.22619.919	VSX J180904.4-261130	18	9	4.47	-26	11	30.4	13.8-<18.7	2451305	341
230	180.22636.104	VSX J180907.9-250318	18	9	7.91	-25	3	18.8	13.3-17.1	2450540	175
231	180.22630.1530	VSX J180908.4-252710	18	9	8.46	-25	27	10.9	14.4:-19.5:	2451415	145
232	115.22569.7	VSX J180908.7-293001	18	9	8.78	-29	30	1.2	13.1-16.5	2451330	317.2
233	121.22554.19	VSX J180909.3-302845	18	9	9.33	-30	28	45.4	>13.2-15.6:	2450951	257
234	180.22764.2033	VSX J180911.8-251051	18	9	11.81	-25	10	51.4	14.3-17.9	2450658	433
235	102.22722.218	VSX J180911.8-275615	18	9	11.86	-27	56	15.9	13.7-17.6	2451400	231.1
236	121.22682.57	VSX J180912.1-303601	18	9	12.11	-30	36	1.8	12.8-16.2	2450994	131.2
237	124.22671.130	VSX J180912.1-312046	18	9	12.14	-31	20	46.6	12.4-15.3	2451376	178
238	180.22767.504	VSX J180913.6-245747	18	9	13.69	-24	57	47.2	>13.7-17.1	2451326	248
239	110.22707.15	VSX J180916.7-285725	18	9	16.73	-28	57	25.7	11.5-15.0	2451266	266.8
240	180.22768.423	VSX J180917.6-245301	18	9	17.62	-24	53	1.2	12.9-16.2	2451397	194
241	124.22673.113	VSX J180927.0-311315	18	9	27.06	-31	13	15.4	11.7-<15.8	2450541	334
242	102.22723.127	VSX J180927.1-275522	18	9	27.14	-27	55	22.1	14.0-<16.3	2450969	361.7

243	180.22765.6	VSX J180927.5-250348	18	9	27.51	-25	3	48.0	14.4-18.5:	2451332	290
244	122.22816.568	VSX J180928.7-302100	18	9	28.71	-30	21	0.4	14.2-17.2	2450526	237.5
245	110.22844.684	VSX J180931.6-283126	18	9	31.69	-28	31	26.4	>13.0-17.3	2451307	205
246	102.22852.69	VSX J180932.6-275639	18	9	32.66	-27	56	39.1	12.9-<16.9	2450177	333.3
247	110.22842.364	VSX J180934.5-283732	18	9	34.56	-28	37	32.7	11.7-15.3	2451001	256
248	110.22841.566	VSX J180934.9-284224	18	9	34.98	-28	42	24.3	12.6-16.1	2451377	306.1
249	180.22890.233	VSX J180935.9-252557	18	9	35.93	-25	25	57.9	13.3-16.7	2450574	302
250	115.22826.1247	VSX J180936.5-294159	18	9	36.5	-29	41	59.0	>12.6:-16.4	2450545	328.5
251	180.22899.16	VSX J180938.3-245014	18	9	38.35	-24	50	14.8	13.6-<17.8	2451292	276
252	180.22890.299	VSX J180939.0-252351	18	9	39.01	-25	23	51.0	13.3-16.3	2451315	254
253	180.22896.60	VSX J180939.0-250102	18	9	39.05	-25	1	2.4	14.5-17.4	2450287	417
254	180.22891.36	VSX J180939.8-252258	18	9	39.84	-25	22	58.6	12.5:-16.7	2450173	345
255	180.22891.657	VSX J180940.7-251955	18	9	40.77	-25	19	55.7	13.0-16.9	2451005	252
256	178.23015.10	VSX J180954.5-254538	18	9	54.51	-25	45	38.3	13.2-15.8	2451295	239
257	180.23026.42	VSX J181001.8-250256	18	10	1.85	-25	2	56.3	13.1-16.6	2450568	245
258	180.23026.65	VSX J181002.8-250335	18	10	2.89	-25	3	35.1	14.2-17.5	2451386	289
259	110.22970.1787	VSX J181004.0-284635	18	10	4.01	-28	46	35.6	13.5-17.3	2451063	417.5
260	180.23158.12	VSX J181007.7-245525	18	10	7.71	-24	55	25.7	13.0-16.4	2451295	193
261	180.23149.114	VSX J181011.2-253027	18	10	11.27	-25	30	27.5	13.6:-17.1	2450512	353
262	110.23100.12	VSX J181012.2-284436	18	10	12.24	-28	44	36.6	11.4-15.2	2451399	203.5
263	115.23088.11	VSX J181013.4-293259	18	10	13.42	-29	32	59.2	>11.8-<15.5	2450612	312
264	180.23151.83	VSX J181020.8-252246	18	10	20.8	-25	22	46.1	14.0-<18.9	2451347	357
265	110.23104.415	VSX J181022.3-283010	18	10	22.3	-28	30	10.1	13.5-17.4	2450657	268.3
266	102.23249.31	VSX J181023.6-273128	18	10	23.66	-27	31	28.8	11.3-15.6	2450543	342.5
267	180.23281.144	VSX J181028.0-252138	18	10	28.01	-25	21	38.2	13.6-17.3:	2451415	149
268	110.23234.471	VSX J181029.8-282913	18	10	29.83	-28	29	13.7	13.1-17.9	2450601	202.6
269	115.23212.24	VSX J181031.4-295657	18	10	31.46	-29	56	57.0	11.4-15.8	2451279	322.6
270	125.23199.20	VSX J181032.2-304802	18	10	32.2	-30	48	2.3	11.7-14.9:	2450549	278
271	122.23205.122	VSX J181033.6-302346	18	10	33.69	-30	23	46.0	12.9:-15.4	2450929	266.5
272	122.23210.9	VSX J181037.9-300516	18	10	37.93	-30	5	16.6	11.9-15.8	2451305	228
273	178.23271.155	VSX J181040.3-260021	18	10	40.32	-26	0	21.8	12.3-16.0	2450535	284
274	125.23330.166	VSX J181042.4-304655	18	10	42.42	-30	46	55.2	14.0-17.2:	2450210	273
275	102.23377.74	VSX J181049.3-273855	18	10	49.35	-27	38	55.0	10.9-14.7	2451401	196.9
276	180.23411.311	VSX J181053.5-252143	18	10	53.5	-25	21	43.2	13.1-17.2	2451327	330
277	180.23414.1919	VSX J181058.4-251106	18	10	58.48	-25	11	6.8	13.6-18.1	2451345	342
278	122.23472.331	VSX J181100.5-295816	18	11	0.5	-29	58	16.9	13.9:-17.0	2450565	415.0:
279	122.23468.65	VSX J181101.4-301457	18	11	1.48	-30	14	57.4	11.9:-15.5	2450627	212
280	116.23474.3915	VSX J181102.7-295128	18	11	2.78	-29	51	28.8	13.8-17.3	2450262	418
281	116.23733.23	VSX J181127.2-294129	18	11	27.2	-29	41	29.6	12.7-16.4	2451007	129.2
282	125.23587.23	VSX J181128.5-305724	18	11	28.51	-30	57	24.3	12.0-16.0	2451255	253
283	178.23661.256	VSX J181133.6-260132	18	11	33.69	-26	1	32.7	12.6-<15.8	2451391	271
284	102.23631.379	VSX J181135.8-280321	18	11	35.84	-28	3	21.2	12.9-16.7	2450932	269.7
285	167.23777.48	VSX J181136.4-265831	18	11	36.41	-26	58	31.6	12.6-15.9	2451407	316
286	116.23733.23	VSX J181137.5-295251	18	11	37.51	-29	52	51.9	11.8-<16.1	2450660	246.5
287	167.23777.578	VSX J181141.2-265816	18	11	41.29	-26	58	16.2	13.2-17.1	2451273	297
288	122.23729.194	VSX J181143.5-301102	18	11	43.5	-30	11	2.3	12.6:-16.3	2450580	251
289	125.23719.27	VSX J181145.4-305119	18	11	45.43	-30	51	19.3	11.0:-14.7	2450594	245
290	178.23786.24	VSX J181146.3-262032	18	11	46.31	-26	20	32.7	>13.4-16.3	2451415	258
291	102.23764.193	VSX J181151.1-274748	18	11	51.12	-27	47	48.9	11.8-15.2	2451349	237.8
292	116.23736.224	VSX J181153.6-294104	18	11	53.64	-29	41	4.2	12.5-16.3	2451376	255.5
293	103.23898.1593	VSX J181154.6-273215	18	11	54.67	-27	32	15.7	12.9-<16.8	2449181	317
294	178.23919.62	VSX J181156.2-260955	18	11	56.25	-26	9	55.9	13.4-16.9	2450193	259
295	167.23907.94	VSX J181203.0-265649	18	12	3.03	-26	56	49.6	11.0-15.1	2450625	237
296	167.23909.15	VSX J181204.1-264803	18	12	4.18	-26	48	3.4	13.0-16.3:	2449123	244
297	125.23849.266	VSX J181205.8-304933	18	12	5.8	-30	49	33.6	12.15:-16.0	2450632	324
298	116.23862.49	VSX J181206.7-295645	18	12	6.76	-29	56	45.9	12.1-15.6	2450973	236.8
299	167.23914.308	VSX J181212.3-263029	18	12	12.39	-26	30	29.8	10.7-15.1:	2450100	590
300	167.24041.505	VSX J181218.9-264157	18	12	18.95	-26	41	57.2	13.7-16.3	2450930	325
301	161.24055.42	VSX J181222.7-254611	18	12	22.76	-25	46	11.4	13.2-17.3	2451352	199
302	103.24032.724	VSX J181223.2-271741	18	12	23.28	-27	17	41.5	13.2-17.1	2450932	265.5
303	111.24003.998	VSX J181224.1-291323	18	12	24.19	-29	13	23.9	14.2-17.7	2451285	258.4
304	167.24039.803	VSX J181227.7-264859	18	12	27.77	-26	48	59.3	13.3-16.7	2451293	236
305	161.24052.238	VSX J181228.6-255608	18	12	28.63	-25	56	8.5	12.5-16.2	2450300	483
306	111.24004.12	VSX J181229.2-291035	18	12	29.29	-29	10	35.6	11.8-15.8	2450304	396.2
307	103.24155.495	VSX J181233.4-274433	18	12	33.4	-27	44	33.8	>13.9-17.7:	2451035	397.7
308	161.24175.357	VSX J181236.3-262436	18	12	36.34	-26	24	36.3	12.5-16.1	2451285	335
309	103.24161.468	VSX J181237.1-271938	18	12	37.1	-27	19	38.1	14.1-<16.7	2451281	251
310	161.24181.437	VSX J181240.9-260159	18	12	40.96	-26	1	59.9	12.1:-16.6	2451367	357
311	116.24126.2599	VSX J181243.3-294328	18	12	43.39	-29	43	28.7	12.5-15.4	2451321	338.5
312	167.24166.219	VSX J181244.0-270151	18	12	44.06	-27	1	51.4	12.5-<15.7	2451290	337
313	161.24184.612	VSX J181245.3-254925	18	12	45.32	-25	49	25.2	13.1-<17.2	2451300	297
314	103.24161.271	VSX J181247.5-272217	18	12	47.53	-27	22	17.3	14.1-<17.0	2450969	341.4
315	103.24289.3749	VSX J181254.9-273055	18	12	54.94	-27	30	55.1	12.2-<15.9	2451376	388.8
316	167.24304.1828	VSX J181256.6-263057	18	12	56.69	-26	30	57.3	12.1-16.4	2451292	335
317	161.24313.160	VSX J181257.4-255145	18	12	57.43	-25	51	45.8	12.9:-<16.4	2450554	339
318	103.24293.554	VSX J181258.8-271423	18	12	58.82	-27	14	23.7	13.7-17.4	2450636	256.7
319	161.24308.23	VSX J181258.9-261516	18	12	58.94	-26	15	16.5	12.7-16.4	2449117	332
320	161.24306.59	VSX J181258.9-262151	18	12	58.95	-26	21	51.3	>12.5-<16.4	2451280	276
321	161.24308.1346	VSX J181259.3-261450	18	12	59.32	-26	14	50.0	14.1-18.9:	2450958	250
322	116.24254.43	VSX J181259.3-295056	18	12	59.38	-29	50	56.6	12.3-15.8	2451005	231.1
323	111.24266.269	VSX J181303.0-290030	18	13	3.05	-29	0	30.3	13.1-15.6	2451314	338.8
324	161.24309.62	VSX J181303.4-261101	18	13	3.49	-26	11	1.3	12.3-16.6	2451379	554

325	161.24305.530	VSX J181304.3-262401	18	13	4.37	-26	24	1.0	14.4-17.8	2451350	215
326	103.24415.352	VSX J181314.5-274513	18	13	14.5	-27	45	13.5	14.1-17.4	2451350	352.2
327	111.24533.27	VSX J181328.0-283342	18	13	28.08	-28	33	42.4	12.4-15.7	2449929	270
328	161.24570.4597	VSX J181335.7-260741	18	13	35.78	-26	7	41.0	12.1-16.6	2451014	221
329	161.24565.21	VSX J181336.6-262458	18	13	36.64	-26	24	58.0	10.6-15.6	2450706	419
330	161.24569.13	VSX J181342.5-260933	18	13	42.59	-26	9	33.6	12.7-16.4	2449117	344
331	161.24702.4183	VSX J181344.7-255639	18	13	44.74	-25	56	39.5	13.0:-16.2:	2450629	266
332	167.24691.11	VSX J181345.2-264020	18	13	45.23	-26	40	20.5	11.9-<15.6	2450652	213
333	167.24689.385	VSX J181354.6-264950	18	13	54.6	-26	49	50.9	13.5-16.7:	2450584	164
334	161.24701.541	VSX J181359.4-255950	18	13	59.46	-25	59	50.9	>14.2-17.6	2450604	445
335	161.24828.45	VSX J181404.0-261407	18	14	4.06	-26	14	7.6	13.2-16.0:	2451289	266
336	177.24844.72	VSX J181404.3-251042	18	14	4.32	-25	10	42.6	12.2-15.2	2451345	128
337	161.24828.47	VSX J181405.9-261507	18	14	5.94	-26	15	7.7	13.2-<15.4	2451295	276
338	177.24850.14	VSX J181409.1-244346	18	14	9.15	-24	43	46.5	12.1-15.0	2451379	402
339	177.24844.20	VSX J181410.7-251044	18	14	10.76	-25	10	44.6	13.2-16.6	2450903	247
340	177.24973.10	VSX J181424.2-251356	18	14	24.24	-25	13	56.1	12.8-16.1	2450313	466
341	167.24945.157	VSX J181424.5-270711	18	14	24.59	-27	7	11.5	12.5:-16.0	2449840	314
342	167.24945.287	VSX J181424.6-270355	18	14	24.68	-27	3	55.6	>13.2-<18.0	2451026	403
343	305.35067.154	VSX J181426.3-215531	18	14	26.38	-21	55	31.9	14.7:-18.2	2451269	297
344	305.35072.100	VSX J181430.7-213828	18	14	30.72	-21	38	28.3	15.1-19.3	2450567	592
345	161.24961.41	VSX J181431.6-260019	18	14	31.61	-26	0	19.1	12.8-16.4	2450340	445
346	305.35071.917	VSX J181432.2-214239	18	14	32.24	-21	42	39.4	>14.2-16.6	2450959	228
347	305.35069.5	VSX J181434.6-215006	18	14	34.65	-21	50	6.1	12.5-16.7	2451367	147
348	305.35237.88	VSX J181440.9-214929	18	14	40.95	-21	49	29.0	15.3-19.9	2451070	408
349	162.25090.3531	VSX J181443.1-260436	18	14	43.16	-26	4	36.2	12.4-16.1	2450919	423
350	305.35242.1008	VSX J181445.9-212747	18	14	45.93	-21	27	47.6	15.0-<19.0	2451326	268
351	162.25081.1403	VSX J181445.9-264037	18	14	45.98	-26	40	37.4	13.1-15.8:	2450554	290
352	305.35237.71	VSX J181448.4-214715	18	14	48.46	-21	47	15.6	14.1-18.0	2450996	267
353	304.35227.37	VSX J181448.8-222739	18	14	48.81	-22	27	39.9	14.2-<18.0	2451414	310
354	304.35232.69	VSX J181451.2-221001	18	14	51.27	-22	10	1.4	13.8:-<17.4	2450930	275
355	304.35393.80	VSX J181456.1-223820	18	14	56.19	-22	38	20.1	13.7-17.5	2451315	300
356	168.25210.115	VSX J181503.8-264507	18	15	3.84	-26	45	7.7	12.0:-15.7	2451364	346
357	304.35391.38	VSX J181504.9-224309	18	15	4.9	-22	43	9.6	11.6:-15.9	2451426	351
358	103.25198.99	VSX J181505.9-273229	18	15	5.98	-27	32	29.6	10.8-15.3	2451010	247.3
359	304.35398.238	VSX J181507.1-221546	18	15	7.19	-22	15	46.8	13.6-17.9	2449962	417
360	177.25238.11	VSX J181510.9-245539	18	15	10.9	-24	55	39.4	12.2-15.4	2451305	196
361	304.35560.456	VSX J181511.5-224227	18	15	11.57	-22	42	27.6	13.5-18.0	2450282	306
362	177.25240.65	VSX J181514.1-244500	18	15	14.19	-24	45	0.3	13.2-16.4	2451382	261
363	161.25218.97	VSX J181514.3-261524	18	15	14.31	-26	15	24.1	11.7-15.7	2450935	234
364	304.35564.2207	VSX J181515.0-222629	18	15	15.05	-22	26	29.0	15.3-19.1	2450973	439
365	304.35569.18	VSX J181515.3-220411	18	15	15.32	-22	4	11.1	12.6-15.8	2450646	195
366	304.35559.349	VSX J181516.1-224442	18	15	16.17	-22	44	42.2	14.8-18.5	2451361	411
367	305.35576.707	VSX J181517.9-213732	18	15	17.91	-21	37	32.3	12.4-19.1	2450609	465
368	304.35560.55	VSX J181520.1-224020	18	15	20.14	-22	40	20.9	12.5-16.2	2451410	206
369	159.25356.50	VSX J181525.8-254039	18	15	25.8	-25	40	39.0	13.4-16.3	2451251	369
370	162.25341.39	VSX J181526.6-264131	18	15	26.67	-26	41	31.3	11.8-<15.7	2450568	297
371	159.25359.306	VSX J181526.7-253023	18	15	26.78	-25	30	23.8	>13.7-<17.8	2450962	434
372	304.35733.17	VSX J181531.0-221901	18	15	31.09	-22	19	1.8	>13.0-16.9	2451306	287
373	168.25331.4739	VSX J181532.1-272046	18	15	32.19	-27	20	46.0	12.0-15.3	2450942	203
374	304.35728.657	VSX J181532.4-224026	18	15	32.47	-22	40	26.0	14.7:-18.2	2450598	491
375	168.25338.91	VSX J181532.7-265218	18	15	32.72	-26	52	18.3	14.0-17.1	2450570	191
376	162.25471.83	VSX J181535.4-263955	18	15	35.43	-26	39	55.9	13.0-<15.7	2451011	408
377	168.25464.4431	VSX J181539.1-271108	18	15	39.17	-27	11	8.1	>12.3-<15.6	2450527	336
378	304.35730.46	VSX J181539.3-223312	18	15	39.35	-22	33	12.5	13.2-17.0	2451264	205
379	159.25483.198	VSX J181540.2-255210	18	15	40.25	-25	52	10.8	12.1-15.9	2451010	404
380	168.25466.63	VSX J181542.1-270127	18	15	42.11	-27	1	27.2	13.3-16.3	2450600	340
381	159.25613.33	VSX J181554.1-255150	18	15	54.17	-25	51	50.9	12.8-17.1	2450888	301
382	304.35900.40	VSX J181554.6-222351	18	15	54.64	-22	23	51.6	12.9-16.1	2451407	179
383	159.25621.21	VSX J181559.6-252314	18	15	59.61	-25	23	14.5	12.0-16.5	2450942	265
384	177.25628.72	VSX J181601.2-245534	18	16	1.28	-24	55	34.7	13.8-<17.5	2450188	270
385	177.25626.140	VSX J181609.3-250018	18	16	9.38	-25	0	18.5	12.8-16.8	2450987	502
386	304.36070.77	VSX J181612.1-221609	18	16	12.16	-22	16	9.8	>14.4-<18.6	2450576	345
387	177.25758.32	VSX J181613.3-245417	18	16	13.35	-24	54	17.4	10.9-15.6	2451344	437
388	177.25761.187	VSX J181619.0-244136	18	16	19.0	-24	41	36.9	12.2-16.7:	2450550	284
389	177.25753.581	VSX J181619.6-251435	18	16	19.68	-25	14	35.0	>14.4-17.1	2451323	401
390	168.25728.18	VSX J181620.0-265430	18	16	20.05	-26	54	30.4	12.1-15.9:	2450590	226
391	177.25755.48	VSX J181624.8-250511	18	16	24.84	-25	5	11.5	>13.2-17.2	2450701	386
392	159.25746.76	VSX J181627.1-254340	18	16	27.15	-25	43	40.4	12.9-16.2	2451006	226
393	162.25864.129	VSX J181631.6-263054	18	16	31.61	-26	30	54.9	>13.4-16.7	2450961	442
394	159.25875.158	VSX J181638.7-254553	18	16	38.7	-25	45	53.1	11.6-16.3	2450980	291
395	304.36409.181	VSX J181640.9-220656	18	16	40.98	-22	6	56.5	15.1-18.6	2451303	115.5
396	159.25878.23	VSX J181643.4-253349	18	16	43.41	-25	33	49.4	12.0-15.3	2450670	190
397	159.26002.132	VSX J181648.6-255720	18	16	48.63	-25	57	20.5	14.0:-16.7	2451341	266
398	159.26004.141	VSX J181651.3-255117	18	16	51.35	-25	51	17.0	12.6-16.9	2450983	245
399	304.36571.89	VSX J181654.2-222900	18	16	54.22	-22	29	0.9	13.2-17.2	2451310	307
400	159.26012.1612	VSX J181654.5-251747	18	16	54.5	-25	17	47.3	13.0-15.8	2451009	256
401	158.26020.2	VSX J181704.5-244414	18	17	4.57	-24	44	14.0	11.7:-15.9	2449090	350:
402	158.26147.297	VSX J181713.1-245642	18	17	13.18	-24	56	42.2	13.1-16.9	2451365	291
403	159.26139.50	VSX J181714.3-252932	18	17	14.38	-25	29	32.2	12.2-16.6	2450660	225
404	304.36735.5	VSX J181720.2-224437	18	17	20.27	-22	44	37.2	>12.2-16.5	2451292	280
405	158.26147.51	VSX J181720.7-245602	18	17	20.73	-24	56	2.2	>13.7-<17.7	2451320	426
406	304.36738.80	VSX J181721.9-223420	18	17	21.99	-22	34	20.8	12.4-<15.6	2451409	235

407	159.26269.172	VSX J181726.5-253029	18 17 26.59	-25 30 29.0	13.3-16.8	2450225	259
408	162.26253.274	VSX J181733.2-263200	18 17 33.25	-26 32 0.6	12.7-<16.2	2451054	224
409	159.26266.24	VSX J181733.8-254302	18 17 33.82	-25 43 2.2	12.5-<16.0	2451019	191
410	162.26251.33	VSX J181739.1-264024	18 17 39.12	-26 40 24.3	11.0:-15.9	2451015	271
411	168.26376.768	VSX J181744.1-270244	18 17 44.13	-27 2 44.5	13.6-17.3:	2449955	422
412	158.26411.343	VSX J181744.2-244010	18 17 44.24	-24 40 10.8	12.9-17.0	2450548	304
413	157.26294.19	VSX J181746.8-322837	18 17 46.85	-32 28 37.9	13.4-15.8	2450640	290
414	158.26404.188	VSX J181755.3-250838	18 17 55.36	-25 8 38.2	11.7:-15.6	2450570	312
415	163.26513.155	NSV 10500	18 18 1.34	-26 32 45.2	11.7:-<15.3	2450611	258
416	163.26512.28	VSX J181813.2-263651	18 18 13.27	-26 36 51.9	10.6:-<13.9	2450636	190
417	163.26520.35	VSX J181814.4-260642	18 18 14.47	-26 6 42.9	12.4:-<15.3	2450918	291
418	163.26647.196	VSX J181820.9-261626	18 18 20.95	-26 16 26.8	>13.3-16.5:	2451271	388
419	159.26654.32	VSX J181826.0-255114	18 18 26.02	-25 51 14.7	12.6-<15.7	2451287	266
420	163.26649.15	VSX J181828.0-261004	18 18 28.06	-26 10 4.4	>13.2-16.8	2450605	276
421	163.26774.84	VSX J181841.0-262744	18 18 41.02	-26 27 44.9	12.4-16.4	2450308	335
422	158.26795.339	VSX J181842.0-250400	18 18 42.07	-25 4 0.8	>12.4-15.7	2451280	392:
423	158.26797.87	VSX J181845.4-245602	18 18 45.49	-24 56 2.1	>11.9:-<15.8	2450581	187
424	160.26786.95	VSX J181852.1-254232	18 18 52.11	-25 42 32.3	14.5-18.4	2451310	471
425	163.26780.212	VSX J181853.6-260611	18 18 53.65	-26 6 11.4	14.5:-18	2450202	170
426	158.26928.20	VSX J181855.6-245503	18 18 55.62	-24 55 3.5	12.2-<15.4	2450583	286
427	158.26928.130	VSX J181859.8-245347	18 18 59.84	-24 53 47.6	>12.1:-15.9	2450680	280:
428	155.26821.9	VSX J181900.0-315959	18 19 0.01	-31 59 59.6	>12.5-<15.6	2449449	362:
429	158.26931.372	VSX J181902.0-244336	18 19 2.09	-24 43 36.4	12.9-16.4	2450586	410
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433	160.27046.38	VSX J181918.5-254038	18 19 18.53	-25 40 38.2	13.2-15.9	2451348	251
434	158.27061.118	VSX J181924.2-244225	18 19 24.22	-24 42 25.2	13.3-17.0	2450653	306
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436	163.27038.22	VSX J181928.9-261437	18 19 28.9	-26 14 37.7	13.4-17.3:	2450616	349
437	158.27184.87	VSX J181937.6-250845	18 19 37.61	-25 8 45.5	13.5-16.7	2451382	462
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439	160.27305.76	VSX J181954.4-254713	18 19 54.45	-25 47 13.1	12.0-15.9	2451299	300
440	163.27295.95	NSV 10623	18 20 1.0	-26 25 58.7	11.3:-15.2	2450611	255
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444	163.27425.55	VSX J182024.6-262729	18 20 24.6	-26 27 29.2	11.2-15.9	2450558	323
445	160.27705.58	VSX J182055.5-250717	18 20 55.54	-25 7 17.1	12.0-16.2	2451334	126
446	160.27829.307	VSX J182105.7-253139	18 21 5.75	-25 31 39.2	12.2-16.2	2451023	195
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449	160.27955.293	VSX J182138.3-254445	18 21 38.3	-25 44 45.2	14.2-17.5	2450952	196.5
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458	171.29370.66	VSX J182444.0-264436	18 24 44.04	-26 44 36.2	12.4-16.0	2449916	284
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461	171.29761.45	VSX J182553.0-264240	18 25 53.03	-26 42 40.6	12.8-15.8	2450990	240
462	171.29763.42	VSX J182553.6-263252	18 25 53.65	-26 32 52.1	>13.3-16.7:	2449555	390
463	171.30150.25	VSX J182635.5-264658	18 26 35.53	-26 46 58.3	11.8-15.6	2450988	152
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467	172.31196.3339	VSX J182907.2-262056	18 29 7.23	-26 20 56.1	12.3-15.8:	2449520	317
468	172.31195.3313	VSX J182910.6-262611	18 29 10.69	-26 26 11.6	12.6-17.0	2451333	141
469	147.31278.30	VSX J182922.7-293243	18 29 22.78	-29 32 43.3	>11.9-15.7	2449551	275
470	172.31453.457	VSX J182942.7-263313	18 29 42.76	-26 33 13.1	12.5:-16.0	2449562	310
471	303.44414.120	VSX J182947.6-144958	18 29 47.6	-14 49 58.8	14.4-18.8:	2450265	452
472	303.44416.1248	VSX J182959.9-144201	18 29 59.96	-14 42 1.3	14.0-18.5	2450922	300
473	147.31664.15	VSX J183026.5-294853	18 30 26.53	-29 48 53.3	12.2-<14.7	2449545	303
474	302.44927.2304	TSVSC1 TN-S300113120-630-67-2	18 30 38.85	-14 13 37.3	13.2-17.3	2450592	270
475	172.31839.1460	VSX J183041.2-265025	18 30 41.26	-26 50 25.8	13.7-15.7	2451364	387
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485	301.45438.561	VSX J183134.3-134521	18 31 34.36	-13 45 21.6	>13.6-17.5	2450986	243
486	172.32360.7	VSX J183141.7-264637	18 31 41.76	-26 46 37.7	12.4-<15.5	2450950	246
487	303.45583.29	VSX J183150.0-151522	18 31 50.0	-15 15 22.4	13.0-<16.1	2450980	495
488	302.45596.255	VSX J183154.7-142358	18 31 54.74	-14 23 58.1	13.7:-18.2	2451367	224

489	302.45601.28	VSX J183156.0-140616	18	31	56.0	-14	6	16.5	13.2-<16.3	2451408	380
490	301.45607.116	VSX J183156.4-133959	18	31	56.4	-13	39	59.1	14.5-<17.5	2451307	279.5
491	303.45587.144	VSX J183158.4-150127	18	31	58.41	-15	1	27.2	>13.8-<16.9	2451307	381
492	302.45597.69	TSVSC1 TN-S300112112-331-67-2	18	31	59.12	-14	22	5.0	12.6-15.7	2451240	209
493	302.45595.105	VSX J183159.7-142819	18	31	59.7	-14	28	19.6	13.8-<16.8	2451293	367
494	302.45594.19	TSVSC1 TN-S300112132-320-67-2	18	31	59.89	-14	31	56.9	12.8-<17.0	2451286	237
495	301.45775.97	VSX J183202.9-133905	18	32	2.91	-13	39	5.5	14.3-18.2	2451397	305
496	303.45754.153	TSVSC1 TN-S300112121-304-67-2	18	32	12.88	-15	3	33.0	>12.1-16.1	2450938	295
497	302.46107.155	VSX J183236.3-135536	18	32	36.38	-13	55	36.8	14.0-16.6	2451408	268
498	302.46105.33	VSX J183240.9-140640	18	32	40.99	-14	6	40.7	13.0-17.0	2450595	333
499	301.46108.65	VSX J183249.0-135200	18	32	49.06	-13	52	0.3	14.3-17.2	2451244	209
500	301.46447.49	VSX J183314.4-133953	18	33	14.48	-13	39	53.7	13.6-17.2	2450969	275

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