

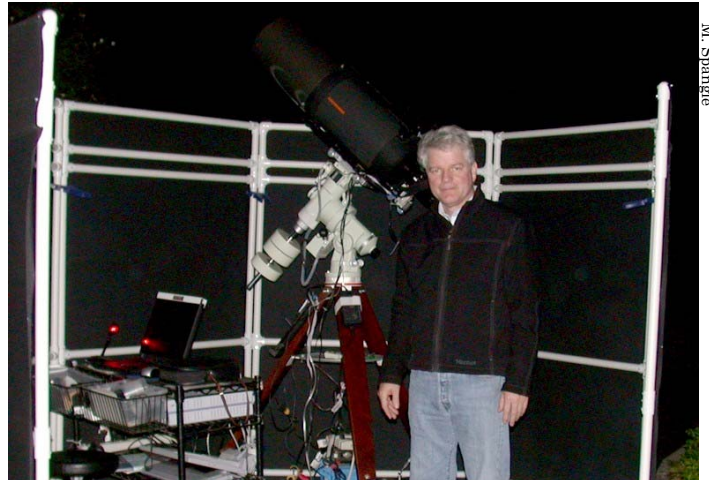
# Double Star Measures Using a CCD Camera

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**Abstract:** Double star measurements using a CCD camera are reported.

Following are 2006 measures of double stars using a CCD camera from my home driveway in light-polluted Larchmont, NY, 17 miles east of New York City (40.55.26N, 73.44.45 W). The method used is the same as described in my paper in Fall 2006 JDSO, Vol. 2, Num.4, pp. 154-155.

The telescope used is a Celestron 9.25" SCT at 2350 mm focal length. The camera is a SBIG ST2000XM, yielding .68"/ per pixel for plate solutions. A photograph of my set up is shown in Figure 1.



M. Spangle

Figure 1: Photograph of the author with the telescope and camera used in this report.

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
ALI 869	18h 15m 24s	+38°36'	11.8	13.6	42.2	8.9	2006.529	10	
ALI 870	18h 15m 30s	+38°22'	11.9	13.4	242.3	8.7	2006.529	4	
ES 1420 AB	18h 15m 36s	+44°17'	9.6	10.8	65.9	8.3	2006.529	6	
ES 1420 AC	18h 15m 36s	+44°17'	9.6	13.6	8.9	14.8	2006.529	6	
ALI 871	18h 15m 38s	+38°42' 19"	10.9	12	180.8	13.1	2006.529	7	
ES 2664	18h 15m 42s	+37°23'	10	10.1	88.2	9.4	2006.540	5	
SEI 563	18h 17m 30s	+34°03'	9.4	10.7	94.1	13.3	2006.529	5	
HJ 1321	18h 21m 18s	+39°20'	10	11	77	9.6	2006.529	5	
HO 432 AB	18h 23m 57s	+38°44' 21"	6.4	12.9	285.2	17.2	2006.54	5	
HO 432 AC	18h 23m 57s	+38°44' 21"	6.4	11.5	42.3	60.5	2006.529	6	

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**Double Star Measures Using a CCD Camera**

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
MLB 648	18h 27m 00s	+28°32'	9.7	11	21.6	10.1	2006.529	5	
ES 475	18h 28m 00s	+27°08'	9.6	10.6	222.4	10.3	2006.529	4	
HJ 1326	18h 29m 12s	+32°20'	10	10	6.9	11.3	2006.529	4	
SLE 182	18h 29m 48s	+39°30'	9.8	10.1	252.6	11.3	2006.529	8	
STF2338 CD	18h 30m 52s	+38°38'25"	8.6	13.1	68.9	60.7	2006.529	4	
STF2338 AB	18h 30m 55s	+38°39'33"	9.9	11.2	300.7	12.2	2006.529	8	
STF2338 AC	18h 30m 55s	+38°39'33"	9.6	9.3	206.5	76.6	2006.529	8	
STF2338 AD	18h 30m 55s	+38°39'33"	9.9	13.1	154.3	51.9	2006.529	8	
ES 1261	18h 32m 24s	+45°10'56"	9.6	12.2	208.9	7.4	2006.54	4	
SLE 201	18h 33m 18s	+32°03'	10.1	11.7	259.1	22.6	2006.529	4	
SLE 208 AB	18h 33m 29s	+39°34'17"	9.1	12	79.7	13	2006.529	7	
SLE 208 AC	18h 33m 29s	+39°34'17"	9.1	10.8	3.2	63.4	2006.529	6	
SLE 209	18h 33m 54s	+32°08'	9.1	10.2	22.7	10.2	2006.529	4	
ES 2668	18h 34m 18s	+45°11'	9.2	11	225	12.6	2006.529	6	
SLE 210	18h 34m 18s	+38°32'	11.8	12.5	235.7	9.9	2006.529	8	
SLE 211	18h 34m 41s	+31°57'33"	10.6	11	271.2	9.2	2006.529	4	
SLE 95	18h 36m 30s	+40°08'	10.9	11.6	110	10.8	2006.529	8	
SLE 220	18h 37m 07s	+32°01'05"	10.1	10.9	238	18.1	2006.529	4	
SLE 230 AB	18h 38m 30s	+38°37'	10.5	11.6	220	9.1	2006.529	6	
SLE 230 AC	18h 38m 30s	+38°37'	10.5	11.3	158.2	39	2006.529	5	
ES 1159 AC	18h 38m 36s	+47°00'	9.9	11.1	345.8	19.5	2006.529	5	
AG 225 AB	18h 39m 46s	+40°34'40"	10.3	10.4	354.7	6.5	2006.529	6	
AG 225 AC	18h 39m 46s	+40°34'40"	9.2	13.5	235.8	12.5	2006.529	7	
SLE 92	18h 40m 24s	+40°28'	9.8	12	99.1	15.8	2006.529	7	
SEI 570	18h 42m 00s	+35°05'	10.5	11	130.6	9.3	2006.529	4	
ES 478	18h 43m 37s	+42°36'40"	10.3	10.8	184.3	9.3	2006.529	6	
HJ 1342	18h 44m 00s	+43°28'	8.8	11.8	185.6	18.5	2006.529	6	
ES 1424	18h 45m 00s	+44°22'	7.9	13	90.3	7.7	2006.529	6	
SEI 574	18h 45m 42s	+32°18'	9	11	263	18.7	2006.529	4	
ES 1560	18h 47m 42s	+41°59'	9.9	12	345.6	9.8	2006.529	9	

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### Double Star Measures Using a CCD Camera

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
HJ 1352	18h 50m 06s	+29°49'	7.8	10	250.5	13.4	2006.529	4	
HJ 1354	18h 53m 00s	+36°21'	9.7	9.8	5	10.2	2006.529	4	
HJ 1355	18h 54m 06s	+27°18'	10	10.5	222.8	12.1	2006.529	4	
ES 2670 AB	18h 58m 12s	+30°11'	9.9	10.3	70.3	11.1	2006.529	4	1
ABH 110 AD	19h 07m 49s	+30°43'36"	10.8	14.9	77.4	52.7	2006.54	3	
ABH 110 AE	19h 07m 49s	+30°43'36"	10.8	14.7	111.6	64.2	2006.54	3	
ABH 110 AF	19h 07m 49s	+30°43'36"	10.8	15.7	288.5	33.9	2006.54	3	
ABH 110 AH	19h 07m 49s	+30°43'36"	10.8	14.6	316.3	91.1	2006.54	3	
ABH 110 AI	19h 07m 49s	+30°43'36"	10.8	15.3	24.7	55.9	2006.564	3	
ABH 110 AJ	19h 07m 49s	+30°43'36"	10.8	15.9	225.5	82.9	2006.54	3	
HLM 16 AB	19h 07m 49s	+30°43'36"	10.5	12.7	311.3	8	2006.54	3	
J 2945 AC	19h 07m 49s	+30°43'36"	10.4	14.1	191.9	9.4	2006.54	3	
STF2467	19h 08m 06s	+30°47'34"	10.1	10.3	262.5	10.4	2006.54	3	
WFC 218	19h 12m 29s	+44°47'18"	9.8	10.2	352.1	9.4	2006.529	4	
HJ 1375	19h 12m 30s	+28°12'	10	11	85.4	12.2	2006.529	4	
AG 375	19h 14m 12s	+26°26'	9.6	10.5	295.5	18.6	2006.529	4	
CHE 217	20h 13m 41s	+14°52'	9.4	10.2	132.6	26.4	2006.715	4	
CHE 218	20h 13m 48s	+14°50'	10.1	11	221.1	26.3	2006.712	4	
CHE 226	20h 14m 18s	+14°51'	10.3	10.6	285.6	12.9	2006.712	4	
CHE 235	20h 14m 36s	+14°52'	10	11.5	28.5	13.8	2006.712	4	
CHE 246	20h 15m 36s	+15°26'	7.9	10	86	16.1	2006.715	5	
CHE 248	20h 15m 42s	+15°20'	9.7	0	324.6	14.4	2006.715	5	
CHE 253	20h 16m 00s	+15°21'	0	0	321.5	31.9	2006.715	5	
ABH 137 AD	20h 16m 54s	+13°03'	12.2	15.7	43	25.5	2006.712	5	
ABH 137 AE	20h 16m 54s	+13°03'	12.2	14.1	289.5	86	2006.712	3	
ABH 137 AF	20h 16m 54s	+13°03'	12.2	15.6	37.8	81.7	2006.712	5	
ABH 137 AG	20h 16m 54s	+13°03'	12.2	15.1	111.8	117.9	2006.712	5	
J 1879 AB	20h 16m 54s	+13°03'	9.6	9.8	232.6	10.9	2006.712	5	
J 1879 AC	20h 16m 54s	+13°03'	9.6	13	271.9	13.7	2006.712	5	

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**Double Star Measures Using a CCD Camera**

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
CHE 269	20h 17m 00s	+15°38'	9	9.9	284.1	27	2006.712	5	
CHE 272	20h 17m 06s	+15°36'	10.2	10.4	105	17.8	2006.715	4	
CHE 274	20h 17m 12s	+15°15'	10.2	10.3	148.2	27.4	2006.715	3	
J 1880	20h 17m 12s	+13°04'	9.4	11.5	245.8	13.5	2006.715	3	
CHE 276	20h 17m 24s	+15°22'	11	11.5	261	18.1	2006.715	4	
CHE 278	20h 17m 42s	+15°39'	10	11.5	90.6	10.2	2006.712	5	
CHE 279	20h 17m 42s	+15°03'	11.2	11.5	181.2	6.6	2006.712	4	
CHE 281	20h 17m 48s	+15°20'	8.9	10.2	315.2	17.6	2006.712	3	
CHE 290	20h 18m 06s	+15°19'	9.7	10.1	153	10	2006.712	4	
SMA 116	20h 18m 06s	+15°19'	10	11.5	158.9	9.6	2006.712	5	
CHE 291	20h 18m 12s	+16°04'	9.8	11.5	274.2	8.4	2006.712	3	
CHE 294 AB	20h 18m 18s	+15°09'	10	10.5	357.3	14.1	2006.712	5	
CHE 294 AC	20h 18m 18s	+15°09'	10	11.5	237.9	15.8	2006.712	5	
HJ 2959	20h 24m 30s	+09°16'	9.4	11.2	262.7	7.3	2006.712	4	
BU 664	20h 24m 36s	+05°31'	7.2	12.7	287.7	8.6	2006.712	3	
HJ 1507	20h 24m 42s	+14°38'	9.5	11.3	63.9	10.3	2006.712	5	
HJ 1508	20h 24m 42s	+14°43'	10.4	10.7	58.9	13.7	2006.712	4	
HJ 268	20h 27m 00s	+11°16'	10	12	248.1	20.3	2006.712	5	
BRT1343	20h 27m 24s	+14°57'	11	11	334.6	4.4	2006.715	4	
A 1674 AC	20h 27m 30s	+14°54'	9.2	12.2	290.3	8.1	2006.712	4	
BU 297 AC	20h 30m 18s	+10°54'	5.9	14.1	339.9	16.9	2006.712	5	
BAL2538	20h 30m 54s	+04°00'	9.8	11.5	201.5	10.8	2006.712	5	
BU 363 AB	20h 30m 58s	+20°36'	6.2	10	80.8	7.1	2006.712	6	
BU 363 AC	20h 30m 58s	+20°36'	6	12.8	206	54.1	2006.712	5	
STF2696 AC	20h 33m 30s	+05°27'	7.7	13.7	347.9	13.5	2006.712	5	
HJ 2981	20h 35m 18s	+02°39'	10	12	5	12.8	2006.712	6	
J 3096 AB	20h 36m 30s	+20°44'	9.4	11.5	1.7	21.9	2006.712	5	
J 3096 BC	20h 36m 30s	+20°44'	11.5	12	8.5	8.3	2006.712	5	
STF2703 AC	20h 36m 48s	'+14°44'	9.1	9.1	233.9	77.2	2006.715	5	
STF2703 BC	20h 36m 48s	+14°44'	9.1	9.1	215.4	66.5	2006.715	5	

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### Double Star Measures Using a CCD Camera

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
STF2703 AD	20h 36m 48s	+14°44'	8.3	0	347.1	85.2	2006.715	5	
STF2703	20h 36m 49s	+14°43'	8.3	8.4	289.9	25.3	2006.715	5	
HJ 5545 AB-C	20h 37m 30s	+14°36'	0	13.1	131.9	13.9	2006.712	5	
LBZ 1	20h 37m 33s	+14°35'	3.7	11.6	271.4	110.8	2006.712	4	
STF2704 AB-D	20h 37m 33s	+14°35'	3.2	11	318.3	47.2	2006.715	4	
BU 288 AB	20h 39m 06s	+15°50'	6	12.4	153.7	5.2	2006.712	3	
BU 288 AC	20h 39m 06s	+15°50'	5.9	10.8	122.5	40.2	2006.712	3	See Note 1 For PA
BU 288 AD	20h 39m 06s	+15°50'	5.9	14.3	145.9	29.2	2006.712	4	
BU 288 AE	20h 39m 06s	+15°50'	5.9	14.3	33.7	23.1	2006.712	4	
SCJ 27 AC	20h 39m 12s	+10°59'	8.4	0	79.4	14.2	2006.712	5	
SCJ 27	20h 39m 13s	+10°58'	8.7	10	262.2	6.1	2006.712	5	
J 3104	20h 39m 42s	+14°06'	9.9	11.2	286.1	6.3	2006.712	4	
J 192	20h 41m 36s	+10°58'	9.4	13.1	0	0	2006.712	5	not there
J 193	20h 42m 00s	+18°21'	8.8	11.8	83.1	5.3	2006.712	4	
COU 424	20h 44m 48s	+19°43'	8	13	234	5.3	2006.712	4	
A 2285 AB	20h 45m 42s	+04°30'	9.2	14.2	221.2	7.5	2006.712	5	
A 2285 AC	20h 45m 42s	+04°30'	9.2	12.7	115.6	33.5	2006.712	5	
BAL2544	20h 46m 00s	+03°44'	9.4	11.4	14.6	17	2006.712	5	
BAL2545	20h 46m 36s	+03°44'	11	11.2	281.3	12	2006.715	9	
BRT1348	20h 47m 54s	+17°32'	9.5	11.5	123.5	5.7	2006.712	4	
J 2321	20h 48m 48s	+05°12'	9.9	11.1	151.3	6.6	2006.712	4	
BAL2547	20h 52m 54s	+03°37'	10	12	220.3	8.5	2006.712	4	
HO 597	20h 53m 36s	+19°35'	7.6	11.9	234.4	10.2	2006.712	5	
BAL2548	20h 53m 41s	+03°35'	9.9	10.8	257.8	7.5	2006.715	6	
BAL2040	20h 55m 12s	+03°14'	9	11.1	67.7	8.3	2006.712	5	
J 3118	20h 58m 30s	+16°07'	9.4	11.2	73.6	5.7	2006.712	4	
HJ 1608	21h 04m 54s	+12°27'	7.6	11.4	257.1	20.1	2006.712	5	
J 3155 AB	21h 57m 42s	+43°56'	10	10.4	130.6	5.8	2006.737	4	
ES 2527	21h 58m 48s	+37°45'	10.5	10.7	321.9	8.2	2006.737	4	
MLB1022	21h 59m 03s	+40°01'21	10	12	245.4	8	2006.737	4	

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### Double Star Measures Using a CCD Camera

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
MLB 789	21h 59m 06s	+39°00'	10.5	11	359	10	2006.737	4	
MLB1023	21h 59m 30s	+39°59'	10.5	10.6	236	5.2	2006.737	8	
MLB1024	22h 00m 06s	+40°01'	10.1	10.5	221.9	23.5	2006.737	7	
ES 2529	22h 03m 36s	+38°25'	11	11	272.5	4.8	2006.737	4	
BRT1157	22h 04m 37s	+46°24'02"	11.5	12	223.8	6.9	2006.742	3	
DYL 4	22h 04m 46s	+45°07'56"	11.5	13	171.8	12.1	2006.742	3	
HJ 1724	22h 04m 48s	+51°25'	10.9	11	45.5	13.4	2006.737	4	Correct PA, Cat wrong
DYL 6	22h 05m 18s	+44°58'09"	14	14.5	345.9	11.9	2006.748	2	
ES 532	22h 06m 24s	+47°16'	10.4	10.5	241.7	9.8	2006.737	5	
MLB 791	22h 07m 24s	+39°06'	9.8	9.9	125.8	4.3	2006.737	4	
MLB 903	22h 08m 06s	+39°54'	10	10.5	197.1	4.9	2006.737	4	
MLB 793	22h 08m 24s	+39°19'	9.8	10.3	208.8	6.5	2006.737	4	
HO 470	22h 08m 32s	+39°22'18"	7.8	13.8	341.9	13.5	2006.737	4	
HJ 1735	22h 09m 15s	+44°50'47"	6.7	9.7	109.3	27.3	2006.737	4	
HJ 1735 AC	22h 09m 15s	+44°50'47"	6.7	14.7	137.9	43	2006.737	4	
HJ 1735 AD	22h 09m 15s	+44°50'47"	6.7	6.8	285.7	109	2006.737	4	
HJ 1735 BC	22h 09m 18s	+44°51'	8.3	10.8	170	22.7	2006.737	1	
MLB 963	22h 11m 06s	+40°32'	10.5	11	9.3	6.7	2006.737	4	
BRT1158	22h 11m 48s	+47°11'	10.8	10.9	147.7	5.3	2006.737	4	
BRT1159	22h 13m 48s	+45°20'	10	10.3	235.1	4.3	2006.737	4	
ES 1113	22h 14m 54s	+51°10'	10.1	10.5	46.9	10.9	2006.748	2	
STF2890 AB	22h 15m 12s	+49°53'	9.3	9.5	10.9	9.4	2006.737	4	
STF2890 AC	22h 15m 12s	+49°53'	8.6	9.7	277.4	73	2006.737	4	
WFC 239	22h 15m 24s	+51°03'32"	9.8	10.9	220.9	6.9	2006.737	4	Same as ES 1113?
ES 2530	22h 15m 36s	+38°11'	10.1	10.6	304.9	5.1	2006.737	4	Same as ALI 700?
MLB 794	22h 17m 42s	+38°51'	9.5	10	349.1	6.8	2006.737	8	
MLB 795	22h 17m 48s	+38°57'	10	10.5	80.9	6.6	2006.737	7	
ES 534 CD	22h 18m 24s	+49°40'	10.2	10.5	102.8	7.1	2006.737	4	
ES 534 AC	22h 18m 26s	+49°39'43"	9.4	10.4	68.6	47.9	2006.737	4	

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### Double Star Measures Using a CCD Camera

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
ES 534 AB	22h 18m 26s	+49°39'43"	9.7	12.7	245.0	13.3	2006.737	4	
HJ 1753 AB	22h 20m 24s	+45°14'	10.7	10.7	183.1	5	2006.737	4	
HJ 1753	22h 20m 25s	+45°14'59"	11	11.7	175.3	42.2	2006.737	4	
ES 1589 AB	22h 21m 12s	+42°27'	9.2	10.3	177.4	9	2006.737	4	
ES 1589 AC	22h 21m 13s	+42°26'55"	8.9	12.3	222.9	26.7	2006.737	4	
MLB 904	22h 24m 00s	+38°55'	10	119.5	103.8	5.4	2006.737	4	
POP 176	22h 24m 30s	+42°42'	9.5	11	100.9	12.4	2006.737	4	
HJ 1766 AB	22h 26m 36s	+50°19'	10.2	10.7	269.8	14.5	2006.737	4	
ES 1180	22h 26m 37s	+50°18'26"	10.7	14.3	276.5	4.2	2006.737	4	
MLB 796	22h 29m 24s	+39°16'	10	10.5	318.1	5.6	2006.737	4	
MLB 905	22h 29m 53s	+39°11'44"	12.8	13	231.1	3.8	2006.737	4	
MLB 964	22h 30m 36s	+39°38'	10	11	32.6	6.2	2006.737	4	
ES 2072 AB	22h 30m 42s	+37°29'	9.7	9.8	327	13.4	2006.737	4	
ROE 47 DE	22h 32m 21s	+39°45'26"	9.4	9.8	176.3	6.5	2006.737	4	
ROE 47 AD	22h 32m 26s	+39°46'47"	5.8	9.4	217.4	101.8	2006.737	4	
ROE 47 AC	22h 32m 26s	+39°46'47"	5.8	10.1	342.5	33.5	2006.737	4	
ROE 47 AB	22h 32m 26s	+39°46'47"	5.8	9.8	155.3	42.9	2006.737	4	
ES 1468	22h 34m 12s	+43°41'	9.4	9.7	326.4	5.9	2006.737	4	
STI2828	22h 34m 47s	+56°53'24"	10.9	12	354.1	12.8	2006.737	3	
ES 2532	22h 34m 54s	+37°02'	9.7	10.2	224.5	6.6	2006.742	3	found at 223532+370439
J 3175 AB	22h 35m 00s	+45°27'	10.5	10.5	137.7	4.4	2006.737	2	
J 3175 AC	22h 35m 00s	+45°27'	10.5	10.5	19.8	9.2	2006.737	2	
ES 1469	22h 35m 37s	+43°07'13"	8.8	11.9	33.8	6.8	2006.742	1	
HJ 1791 AC	22h 35m 39s	+56°51'40"	7.6	10.9	140.7	89.6	2006.737	3	
HJ 1791 AB	22h 35m 39s	+56°51'40"	7.6	9.7	59.4	17.2	2006.737	3	
SMA 175	22h 37m 18s	+53°21'	10.5	10.6	56.4	11.2	2006.737	3	
ES 1470	22h 37m 24s	+43°23'	10.3	10.6	335	5.8	2006.737	3	
HJ 1793	22h 38m 17s	+47°03'01"	11.4	12.4	288.8	15.5	2006.737	3	
ES 843	22h 39m 48s	+48°43'	10.4	10.5	206.9	8.2	2006.737	4	
SMA 178	22h 40m 48s	+52°59'	10	11	181.3	16.7	2006.737	4	

*Table continued on next page*

### Double Star Measures Using a CCD Camera

Name	RA	Dec	Mag 1	Mag 2	PA	SEP	Date	n	Notes
DOB 16	22h 43m 30s	+38°13'	10	10.5	79	23.9	2006.737	8	
ES 1997	22h 43m 36s	+38°11'	10.2	10.5	90.5	4.3	2006.737	7	
MLB 995	22h 43m 42s	+40°15'	10	10.1	303.6	4.7	2006.737	4	
HJ 1805	22h 44m 48s	+47°00'	9.6	10.1	158.2	7.4	2006.737	4	
ES 847	22h 44m 59s	+46°57'19"	9.8	12.7	255.7	10.7	2006.737	4	
AG 287	22h 45m 18s	+40°02'	8.9	10	193.6	14.5	2006.737	4	
ES 1700	22h 45m 34s	+40°03'56"	10.6	10.7	241.8	4.2	2006.737	4	
HJ 1813	22h 48m 36s	+41°36'	10.1	10.2	61.2	9.4	2006.737	3	
HJ 1815	22h 49m 24s	+45°28'	9.5	9.8	30.9	10.1	2006.737	4	
HJ 1816	22h 49m 55s	+46°19'52"	10.6	10.7	134.5	6.9	2006.737	4	
MLB 966	22h 50m 42s	+40°05'	10	11	120.5	7.2	2006.737	4	
ES 2534	22h 51m 18s	+37°14'	10	10.1	67.1	5.6	2006.737	4	
ES 851	22h 51m 48s	+48°04'	9.9	10.6	262.9	8.5	2006.737	4	
ES 852	22h 52m 12s	+47°34'	8.7	10.3	327.6	7.2	2006.737	4	
HEI 87	22h 52m 30s	+48°28'	10.5	10.8	280.6	5.1	2006.737	4	
HJ 1827	22h 53m 00s	+52°07'	10.7	11	322.5	9.8	2006.737	4	
HJ 1830 AC	22h 54m 24s	+55°38'	9.8	10.3	82.8	13.6	2006.737	4	
ES 691 AD	22h 54m 25s	+55°39'45"	9.8	13.5	272.3	20.5	2006.737	4	
ES 691 AB	22h 54m 25s	+55°39'45"	9.8	12.5	275.6	6.9	2006.737	4	
ES 691 DC	22h 54m 25s	+5539'45"	10.3	13.5	269.1	34	2006.737	4	
ES 2721	22h 55m 30s	+36°40'	10.1	10.9	105.8	9.3	2006.737	4	
SMA 181	22h 55m 48s	+45°08'	9.5	10	280.4	10	2006.737	4	
MLB 801	22h 56m 54s	+39°45'	10.5	10.6	357.6	6	2006.737	4	

