

2007 Observations with a CCD Camera and Various Telescopes

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Abstract: I report on the measurements of 77 double stars in 2007 using four different telescopes

2007 was a year of experimentation, as I changed equipment and software routines. For the measures on the following pages, I used four different telescopes: a Celestron 14" SCT; a Questar 7" Classic OTA; a Takahashi Mewlon 250; and a Celestron C9.25" SCT. I used a SBIG ST2000XM monochrome CCD camera to capture images of the targets.

My observing routine did not change this year. I set up in my driveway, using a Takahashi NJP Temma 2 goto mount for the telescope. I used Astroplanner software to plan my observing session. The observing plans use the catalogs of neglected pairs from the U.S. Naval Observatory's WDS project. I use Software Bisque's suite of astronomy software (TheSky 6 Pro, Orchestrate, CCDSOFT, Tpoint) to find the target, and control the mount and the camera. I imaged each target several times, taking at least 6 images each time; sometimes, I would visit a target several times in one night, other times, I would image a target over several different sessions spread over 2

to 7 nights. The number of images taken depended on seeing conditions at the time, as well as the delta magnitude and separation of the target. On average, about 40 images were used for each measure in the list. Some sample images are shown after the table of measurements.

This year, I used Florent Losse's excellent software, REDUC, to analyze the images. Reduc requires use of a calibration star; my practice is to take images of a calibration star near the meridian at the start, middle and end of an observing session, to average out the variations in a night's seeing conditions.

2008 should be another year of change. I am planning on building a roll-off roof observatory at a dark sky site about 2 hours north of my home, which I will operate remotely over the internet. Hopefully, this will make my observing time even more productive!

DATE	WDS	NAME	RA	DEC	PA	SEP	N	NOTES
2007.888	02355+5341	ES 620	02h 35m 30s	+53°41'16"	216.32	6.26	1	
2007.896	02430+5004	ES 1134	02h 43m 02s	+50°03'35"	359.1	3.57	1	
2007.888	02464+5310	ES 9	02h 46m 21s	+53°09'46"	304.7	10.33	1	
2007.868	02494+5159	ES 873	02h 49m 24s	+51°59'13"	99.38	4.82	1	
2007.888	02511+4807	ES 557	02h 51m 07s	+48°06'57"	322.59	5.92	1	
2007.896	02515+5314	ES 766	02h 51m 33s	+53°14'29"	300.27	4.42	1	

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DATE	WDS	NAME	RA	DEC	PA	SEP	N	NOTES
2007.896	03285+4857	ES 1136	03h 28m 32s	+48°56'27"	353.74	9.49	1	LARGE CHANGE
2007.885	03457+3908	MLB 16	03h 45m 40s	+39°08'27"	309.11	14.57	1	
2007.888	03467+4241	FOX 134	03h 46m 45s	+42°39'27"	107.62	5.84	1	
2007.882	03468+4002	MLB 919	03h 46m 48s	+40°01'46"	150.1	3.14	1	
2007.238	10332+4026	HJ 2534	10h 33m 14s	+40°25'32"	357.52	17.07	1	
2007.255	11007+4244	ES 2637	11h 00m 42s	+42°43'53"	209.1	12.13	1	
2007.241	11033+3835	HJ 2555	11h 03m 18s	+38°35'21"	45.96	11.55	1	
2007.348	11591+0032	J 92	11h 59m 03s	+00°31'50"	176.06	14.8	3	
2007.307	12029+2700	HJ 515	12h 02m 56s	+27°00'21"	151.31	3.6	3	
2007.304	12120+3850	LDS4188	12h 12m 02s	+38°49'09"	333.89	16.52	1	
2007.301	12161+4040	STF1622	12h 16m 08s	+40°39'37"	259.73	11.597	1	
2007.301	12162+4154	ES 124	12h 16m 11s	+41°53'55"	117.82	7.72	3	
2007.304	12165+4149	HJ 1215	12h 16m 32s	+41°49'22"	16.31	26.67	3	
2007.301	12207+1748	HO 52	12h 20m 43s	+17°47'34"	43.75	8.8	2	
2007.348	12223+0318	STT 247	12h 22m 17s	+03°17'52"	43.47	13.31	3	
2007.348	12270-0332	A 79	12h 27m 01s	-03°32'04"	322.98	30.78	2	
2007.348	12575-0158	BAL 547	12h 57m 31s	-01°58'28"	309.73	16.7	3	
2007.348	13108+1318	BU 931	13h 10m 47s	+13°18'24"	198.81	4.26	1	
2007.348	13189+0030	A 2585AC	13h 18m 54s	+00°30'20"	231.57	13.2	3	
2007.348	13329-1522	HJ 2658	13h 32m 52s	-15°21'47"	323	17.43	3	
2007.348	13393-0436	HJ 1236	13h 39m 21s	-04°36'35"	111.2	6.18	4	
2007.304	13425+2812	ES 442	13h 42m 28s	+28°12'09"	255.76	5.48	1	
2007.348	13429-1502	BU 1437	13h 42m 54s	-15°02'07"	356.64	18.29	4	
2007.348	13526-1610	SKI 15	13h 52m 37s	-16°10'13"	275.588	19.26	5	
2007.395	13555-1213	RST3854AB	13h 55m 32s	-12°13'23"	270.35	2.91	1	
2007.348	13572-1233	HJ 4637	13h 57m 11s	-12°32'47"	141.06	13.42	3	
2007.340	14226+3230	HO 262	14h 22m 38s	+32°30'13"	274.27	5.63	7	

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DATE	WDS	NAME	RA	DEC	PA	SEP	N	NOTES
2007.367	14397+4152	ES 1250	14h 39m 41s	+41°51'50"	174.17	6.04	6	
2007.367	14439+4743	ES 962	14h 43m 51s	+47°43'03"	258.46	9.91	7	
2007.345	14495+3454	HJ 558	14h 49m 30s	+34°54'15"	85.37	23.59	8	
2007.340	15101+3741	HJ 567	15h 10m 08s	+37°41'27"	15.25	33.64	5	
2007.340	15171+4117	ES 74	15h 17m 04s	+41°17'08"	122.65	9.45	6	
2007.395	15190+2541	LDS6304	15h 18m 59s	+25°41'30"	191.39	3.575	2	
2007.395	NDC11477	KZA 94	15h 31m 06s	+39°25'00"	255.99	15.84	4	
2007.348	15340+4110	KZA 101	15h 33m 58s	+41°09'40"	204.27	9.4	3	
2007.340	15342+4055	KZA 102	15h 34m 10s	+40°54'51"	188.21	9.8	6	
2007.340	15356+4059	KZA 104	15h 35m 36s	+40°58'43"	98.58	29.6	3	
2007.395	NDC11590	HJ 574AB	15h 50m 18s	+32°24'00"	93.49	15.82	3	
2007.395	NDC11610	HJ 1280	15h 53m 00s	+39°13'00"	0.44	32.3	3	
2007.395	NDC11631	HJ 2800	15h 57m 18s	+30°05'00"	279.76	14.42	4	
2007.395	16028+3705	HJ 580	16h 02m 51s	+37°05'27"	13.65	33.91	5	
2007.405	16089+4521	STF2015	16h 08m 55s	+45°21'11"	101.88	9	3	
2007.403	16124+2626	HO 551	16h 12m 25s	+26°25'53"	80.1	6.9	4	
2007.395	16147+3352	STF2032	16h 14m 41s	+33°51'31"	93.27	24.24	2	
2007.395	16223+2445	STF2039	16h 22m 17s	+24°44'32"	346.48	11.88	2	
2007.395	16263+2254	POU3226	16h 26m 19s	+22°53'54"	28.16	14.85	1	
2007.395	16309+2603	HO 406	16h 30m 54s	+26°02'52"	347.3	6.49	4	
2007.392	16440+4459	KZA 110	16h 44m 03s	+44°58'36"	145.36	17.32	4	
2007.395	16443+4551	KZA 111	16h 44m 19s	+45°50'04"	90.92	12.45	2	
2007.405	16465+4759	ES 1089	16h 46m 34s	+47°58'42"	149.84	11.1	3	
2007.405	17046+3900	HJ 2804	17h 04m 33s	+38°59'27"	243.62	6.84	3	
2007.405	17048+2805	WAL 76	17h 04m 44s	+28°05'13"	60.71	15.94	3	
2007.405	17389+4522	ES 1258	17h 38m 54s	+45°22'27"	315.87	11.72	3	
2007.405	17420+2127	DRD 1	17h 41m 50s	+21°25'54"	354	17.47	3	

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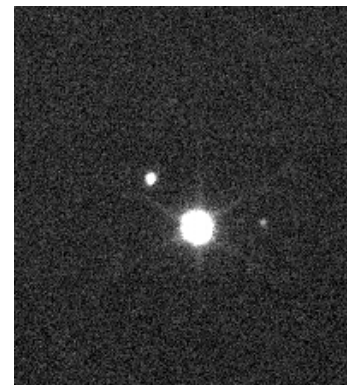
DATE	WDS	NAME	RA	DEC	PA	SEP	N	NOTES
2007.405	17444+4027	ES 9004	17h 44m 22s	+40°26'51"	245.78	13.37	3	
2007.405	17479+3417	BU 632	17h 47m 52s	+34°16'40"	349.65	6.7	1	
2007.411	18070+3440	ES 2286	18h 06m 55s	+34°40'03"	175.32	5.24	1	
2007.584	19159+5048	ES 2676	19h 15m 52s	+50°47'59"	186.56	8.37	1	
2007.584	19248+2856	ES 484	19h 24m 48s	+28°56'11"	313.09	9.12	2	
2007.584	19286+3711	HU 1303	19h 28m 38s	+37°11'18"	71.48	4.97	1	
2007.584	19287+4905	HJ 1408	19h 28m 42s	+49°03'44"	235.76	7.32	1	
2007.586	19288+4617	HJ 1404	19h 28m 47s	+46°17'40"	129.71	5.9	1	
2007.586	19364+4808	ES 491	19h 36m 20s	+48°06'38"	234.38	24.46	2	
2007.605	19413+2835	MLB 526	19h 41m 17s	+28°36'19"	12.7	7.91	1	
2007.584	19487+3342	SMA 97	19h 48m 38s	+33°41'15"	286.4	4.79	1	
2007.619	19490+3731	ES 2499	19h 49m 00s	+37°30'24"	155.55	6.22	1	
2007.619	19500+4509	ES 23	19h 49m 59s	+45°09'05"	136.28	8.54	1	
2007.721	22184+4940	ES 534	22h 18m 26s	+49°39'43"	244.34	13.91	2	
2007.721	22299+5225	LEO 53	22h 29m 53s	+52°25'00"	355.35	13.02	2	
2007.721	22308+5630	STI2805	22h 30m 55s	+56°30'12"	198	18.04	2	
2007.723	22342+4830	HJ 1787	22h 34m 12s	+48°29'30"	298.28	9.28	1	



DRD 1



ES 74



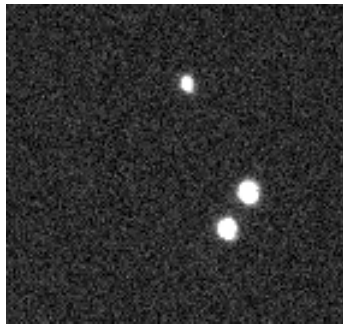
ES 471

North is up, East to left in all images

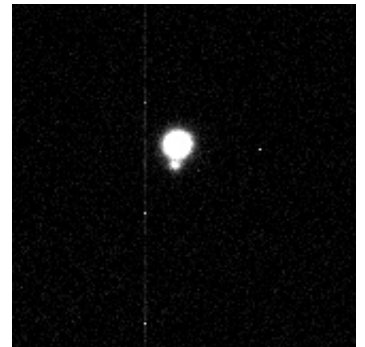
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ES 962



ES 1089



ES 1250



HJ 2800



HO 406



KZA 94



KZA 101



MLB 526



STT 247

North is up, East to left in all images