Observations of Double Stars at "Stazione Astronomica Betelgeuse"

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Abstract: This report contains measurements of 49 different double star systems. Data were obtained at the "Stazione Astronomica Betelgeuse" in Magnago, Italy as data mining activity on CCD images taken with different projects from the position measurement of double stars.

Introduction

During the analysis of CCD images taken during the period spanning from 2003 to 2012, with the purpose of photometry of variable star and of astrometry of minor planets, we have identified on our images a lot of already known double stars previously included in the last edition of the Washington Visual Double Star Catalog (Mason, et al. 2001).

Analysis

In order to perform astrometry on double stars, we analyzed images collected with the instruments of the "Stazione Astronomica Betelgeuse (SAB)" located in Magnago, Italy (a Schmidt-Cassegrain 0.20m-f/10.0 telescope equipped with a KAF401E CCD camera from 2003 to 2011 and a Schmidt-Cassegrain 0.25m-f/10.0 telescope with a KAF261E CCD camera since 2012).

In Table 1, for each pair of double stars we report designation, epoch, position (R.A. and Decl.) unfiltered magnitude as measured with the software Astrometrica (Raab, 2011), separation and position angle derived as described by Buchheim (2008), and the number of measurements of the pair.

References

Buchheim R.K., 2008, "CCD Double-Star Measurements at Altimira Observatory in 2007", *JDSO*, **4**, 27.

Mason B.D., et al., 2001, "The Washington Visual Double Star Catalog (WDS), Version 2010-07-03", *A.J.*, **122**, 3466.

Raab H., 2011, Astrometrica (Version 4.6.6.391), http://www.astrometrica.at.

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Name	Epoch	R.A.				Decl.		Mag.	Sep. (ρ) "	P.A. (θ) °	Num.
		h	m	s	°	'	"				
ABL 88A	2008.00	2	54	26.7	0	29	41.7	10.4	19.12	235.06	2
ABL 88B		2	54	25.7	0	29	30.8	12.6			
ALI 606A	2008.52	17	38	58.3	37	51	59.8	10.5	10.89	98.45	1
ALI 606B		17	38	59.2	37	51	58.2	12.3			
BAL1103A	2012.06	7	31	51.2	0	18	7.6	12.5	17.94	203.14	1
BAL1103B		7	31	50.7	0	17	51.1	13.4			
BKO 35A	2010.21	8	51	7.2	11	53	1.6	12.4	10.64	141.37	3
BKO 35B		8	51	7.7	11	52	53.9	13.3			
BKO 36A	2009.07	8	51	7.8	11	48	9.3	11.2	32.61	29.32	5
BKO 36B		8	51	8.9	11	48	37.8	13.4			
BKO 37A	2009.16	8	51	17.0	11	50	46.3	10.7	8.68	203.95	4
BKO 37B		8	51	16.8	11	50	38.2	11.6			
BKO 38A	2009.07	8	51	18.5	11	49	21.5	12.3	9.64	74.30	5
BKO 38B		8	51	19.2	11	49	24.2	13.2			
BKO 39A	2009.07	8	51	15.4	11	47	31.4	12.3	12.43	233.46	5
BKO 39B		8	51	14.8	11	47	24.0	12.4			
BKO 40A	2009.07	8	51	17.5	11	45	22.6	8.9	21.15	332.50	5
BKO 40B		8	51	16.8	11	45	41.4	13.6			
BKO 41A	2009.15	8	51	23.9	11	47	15.0	12.0	8.64	145.68	4
BKO 41B		8	51	24.2	11	47	7.9	12.5			
BKO 42A	2009.07	8	51	27.0	11	51	52.6	10.7	13.85	116.97	5
BKO 42B		8	51	27.8	11	51	46.3	13.8			
BKO 43A	2009.16	8	51	32.6	11	48	52.0	10.7	10.39	94.97	4
BKO 43B		8	51	33.3	11	48	51.3	11.7			
BKO 45A	2009.07	8	51	32.4	11	47	52.7	12.5	8.31	356.09	5
BKO 45B		8	51	32.4	11	48	0.8	12.5			
BKO 46A	2008.58	8	51	34.3	11	51	10.5	10.7	15.87	182.65	4
BKO 46B		8	51	34.3	11	50	54.7	13.3			
BKO 47A	2008.58	8	51	42.7	11	46	36.5	12.0	31.71	72.56	4
BKO 47B		8	51	44.7	11	46	46.0	12.7			
CHE 118A	2009.07	8	51	7.8	11	48	9.3	11.2	23.84	61.71	5
CHE 118B		8	51	9.2	11	48	20.6	13.0			
CHE 119A	2008.10	8	51	17.5	11	45	22.6	8.9	12.92	300.22	3
CHE 119B		8	51	16.7	11	45	29.1	12.0			
CHE 119A	2008.58	8	51	17.5	11	45	22.6	9.1	32.48	13.31	4
CHE 119C		8	51	18.0	11	45	54.3	12.3			
CHE 120A	2009.64	8	51	26.2	11	53	52.0	9.9	31.21	144.38	4
CHE 120B		8	51	27.4	11	53	26.6	12.3			
CHE 121A	2009.07	8	51	27.0	11	51	52.6	10.7	31.28	37.25	5

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Name	Epoch	R.A.				Decl.		Mag.	Sep. (ρ) "	P.A. (θ) °	Num.
		h	m	s	°	'	"				
CHE 121C		8	51	28.8	11	51	59.8	12.2			
CHE 123A	2008.58	8	51	34.3	11	51	10.5	10.7	39.20	220.47	4
CHE 123B		8	51	32.6	11	50	40.6	12.1			
CHE 124A	2009.64	8	51	39.2	11	50	3.8	11.9	26.83	273.00	4
CHE 124B		8	51	37.4	11	50	5.3	12.2			
CHE 125A	2009.07	8	51	42.3	11	50	7.6	11.1	15.78	174.09	5
CHE 125B		8	51	42.5	11	49	52.0	12.2			
CHE 126A	2008.58	8	51	42.7	11	46	36.5	12.0	22.92	121.57	4
CHE 126B		8	51	44.0	11	46	24.5	12.3			
CHE 127A	2010.21	8	51	48.6	11	49	15.6	10.7	24.70	50.95	3
CHE 127B		8	51	50.0	11	49	31.1	12.2			
CHE 127A	2010.21	8	51	48.6	11	49	15.6	10.7	28.85	14.74	3
CHE 127C		8	51	49.1	11	49	43.5	12.3			
ES 962A	2009.19	14	43	51.2	47	43	2.3	9.1	9.50	257.84	1
ES 962B		14	43	50.3	47	43	0.3	10.4			
HJ 3253A	2009.87	3	52	10.5	26	13	53.1	9.3	30.61	72.51	1
HJ 3253B		3	52	12.7	26	14	2.3	9.6			
HO 120A	2003.71	20	11	58.7	34	35	39.7	8.3	24.67	199.90	1
HO 120B		20	11	58.0	34	35	16.5	11.8			
HO 236A	2012.95	6	41	3.4	20	38	44.1	18.3	18.26	203.08	1
HO 236B		6	41	2.8	20	38	27.3	12.9			
HO 400A	2012.51	16	0	23.6	15	40	3.5	9.4	11.46	137.12	1
HO 400B		16	0	24.1	15	39	55.1	12.3			
J 389A	2010.31	9	50	49.2	11	50	32.9	7.8	29.09	145.24	3
J 389B		9	50	50.3	11	50	9.1	12.6			
JEF 3A	2009.60	20	7	36.5	17	42	14.7	14.8	11.32	280.17	1
JEF 3B		20	7	35.8	17	42	16.7	13.4			
LDS2632A	2012.38	12	9	28.1	62	58	41.9	9.2	24.99	8.78	1
LDS2632B		12	9	28.7	62	59	6.6	16.1			
MLB 521A	2009.12	6	47	41.5	28	7	49.9	11.5	6.20	1.22	1
MLB 521B		6	47	41.5	28	7	56.1	12.1			
MMA 024A	2012.94	6	7	26.2	51	3	43.2	14.6	22.76	333.69	1
MMA 024B		6	7	25.1	51	4	3.6	14.5			
POU2145A	2010.31	6	56	22.4	24	45	30.2	13.2	12.85	40.29	1
POU2145B		6	56	23.0	24	45	40.0	13.8			
POU3250A	2009.56	16	52	5.4	23	49	13.8	11.2	16.36	53.63	1
POU3250B		16	52	6.4	23	49	23.5	13.7			
POU3845A	2005.67	19	28	15.2	24	24	6.7	13.0	15.50	106.11	1
POU3845B		19	28	16.3	24	24	2.4	13.4			
POU5258A	2012.53	21	13	3.6	24	23	29.0	9.8	29.96	65.76	2

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		h	m	s	°	'	"				
POU5258B		21	13	5.6	24	23	41.3	13.4			
POU5268A	2012.53	21	13	27.0	24	25	36.0	13.2	8.55	358.17	2
POU5268B		21	13	27.0	24	25	44.6	13.5			
POU 656A	2008.89	5	18	58.0	23	8	15.6	10.6	10.93	94.72	1
POU 656B		5	18	58.8	23	8	14.7	12.7			
SLE 73A	2011.11	5	24	44.9	40	16	33.9	11.4	10.86	315.92	1
SLE 73B		5	24	44.2	40	16	41.7	12.8			
STI1283A	2006.84	0	8	48.0	54	39	36.3	10.3	12.99	124.74	1
STI1283B		0	8	49.3	54	39	28.9	11.9			
STI1627A	2011.07	1	33	13.1	56	10	46.7	10.6	15.47	126.49	1
STI1627B		1	33	14.6	56	10	37.5	12.5			
STI2875A	2012.55	22	50	53.8	56	58	53.2	13.6	11.48	36.73	1
STI2875B		22	50	54.7	56	59	2.4	13.5			
STT 356A	2007.58	18	33	12.4	40	9	50.7	9.1	28.88	121.87	2
STT 356B		18	33	14.6	40	9	35.5	7.0			
STT 356A	2007.58	18	33	12.4	40	9	50.7	9.1	45.50	44.86	2
STT 356C		18	33	15.2	40	10	23.0	10.2			