

Astrometric Measurements of Five Double Stars Report of February 2014

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Abstract: From my residence in Paso Robles, California, the position angles and separations of five double stars were measured. The two objectives of this project were to measure the position angles and separations of the aforementioned stars, and to learn the techniques necessary to conduct this research.

Methodology

The observations were made from my house in Paso Robles, California (located about 35°37'36" N and 120°41'24" W), using a Celestron telescope model CPC 1100. The telescope is computerized, motorized, and was equipped with a CCD camera. The telescope is a Schmidt-Cassegrain design with an aperture of 279mm. The manufacturer gives the focal length at 2,800mm. The CCD camera, a model ST-402, is a product of the Santa Barbara Instrument Group.

After having aligned the telescope with the Global Positioning Satellite, a reference star was used to set the focus, and configure the software. The software consisted of CCD Soft version 5.00.195 and SKY 6 version

6.0.0.65; both programs are products of Software Bisque. Those products were used to operate the telescope and camera and to reduce the data. During each viewing session, six photographs of the reference star and 10 photographs of the target stars were taken. Not all of the photographs were useful, and the number of useful images is reported for each star.

For each viewing session, the date, starting time, ending time, temperature, humidity, lunar phase, wind, and visibility were recorded. This author defines "visibility" as the number of stars in the Little Dipper which can be seen without an instrument, and the interval is from 1 to 7 stars.

A literature search was made for each star, and those sources for which data was reported are listed.

Star Name	WDS Number	SAO Number	BD Number	Date	# Obs	Position Angle °	Separation Arc seconds
HD 218472 in PEG	23079+3128	73021	+30 4881	13 Sept 2013	6	54.6	18.6
WDS				1872		80	10
WDS				2001	14	54.0	18.4
9 - 11:00pm PDT	Tem: 20-18°C	Hum: 50%	½ moon	Wind: calm		Vis: 2-3	Both white

Other Identifiers

ADS 16528 A	CSI+30 4881 1	HIC 114224	SAO 73021
AG+31 2387	GC 32222	HIP 114224	SKY# 43909
AGKR 20691	GCRV 14522	IDS 23031+3055 A	TD1 29636
BD+30 4881	GSC 02751-00021	2MASS J23075522+3127316	TYC 2751-21-1
CCDM J23079+3128A	HD 218472	PPM 88552	WDS J23079+3128A

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Star Name	WDS Number	SAO Number	BD Number	Date	# Obs	Position Angle °	Separation Arc seconds
ES 1017 in LAC	05278+5009	-	+50 1175	27 Sept2013	10	148.6	11.2
WDS				1898		134.0	12.1
WDS				2003	4	148.0	11.2
9: - 11:30pm PDT	Tem: 20-15°C	Hum: 40%	no moon	Wind: calm		Vis: 3-4	Both white

Other Identifiers

ADS 15789 A	GEN#+0.05402721J	LF 4 +55 49	WDS J22152+5530A
BD+54 2721	GSC 03986-00232	TYC 3986-232-1	[AC2000b]Trap 895 1

Star Name	WDS Number	SAO Number	BD Number	Date	# Obs	Position Angle °	Separation Arc seconds
SEI 129 in AUR	05157+3228	-	-	29 Dec 2013	6	98.0	8.1
WDS				1895		101	7.5
WDS (Neglected Star)				2001	6	98	8
6 - 9:30pm PST	Tem: 10-6°C	Hum: 45%	no moon	Wind: calm		Vis: 1-2	Both white

Other Identifiers

TYC 2394-951-1	WDS 05157+3228
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Star Name	WDS Number	SAO Number	BD Number	Date	# Obs	Position Angle °	Separation Arc seconds
ES 63 in AUR	05357+4118	40463	+41 1227	31 Dec 2013	9	174.3	8.0
WDS				1894		172	6.4
WDS				1998		174	8
7:30: - 9:30pm PST	Tem: 10-5°C	Hum: 40%	no moon	Wind: calm		Vis: 1-2	White, blue

Other Identifiers

ADS 4173 A	CSI+41 1227 1	IDS 05287+4114 A	TYC 2918-966-1
AG+41 579	ES 63B	2MASS J05354300+4118235	WDS J05357+4118A
BD+41 1227	GSC 02918-00966	PPM 48259	
CCDM J05357+4118A	HD 36720	SAO 40463	

Star Name	WDS Number	SAO Number	BD Number	Date	# Obs	Position Angle °	Separation Arc seconds
ES 891 in AUR	05274+5422	-	+54 892	31 Dec 2013	10	72.2	8.1
WDS				1910	1	72	8
7:30 - 9:30pm PST	Tem: 10-5°C	Hum: 40%	no moon	Wind: calm		Vis: 1-2	White, blue

Other Identifiers

ADS 4023 A	CCDM J05274+5422A	IDS 05192+5417 A	TYC 3748-134-1
AG+54 468	CSI+54 892 1	2MASS J05272442+5422161	WDS J05274+5422A
BD+54 892	GSC 03748-00134	PPM 29837	

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Acknowledgements

Grateful appreciation is given to Russell Genet at Cuesta College, for his training on the methodology and use of the CCD camera and software, to Tom Smith for the correct versions of the software, and to Eric Weise for the software updates.

This research made use of the SIMBAD database operated at CDS, Strasbourg, France, and the Washington Double Star Catalog maintained by the United States Naval Observatory.

References

Mason, B., et al., 2012, *Washington Double Star Catalog*

For the stars in this report, no data was found in the following references:

Hipparcos and Tycho Catalogue, 2011

Hoffleit+, 1991, *The Bright Star Catalogue*, 5th Revised Edition, Yale University.

Clark, R. ed; *Journal of Double Star Observations - all issues*

McEvoy B., 2011, *Herschel 500 Double Star List*

Muenzler, K., 2003, Eagle Creek Observatory

OAG catalog 2003, as reported by the WDS; original list and all 26 supplements

