

Measurements of Neglected Double Stars: December 2016 Report

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Abstract: This article presents measurements of 36 neglected double stars and one double star. The stars were selected from the Washington Double Star Catalog published by the United States Naval Observatory. The photographs were taken by remote telescopes. The measurements were done by the author.

Methodology

Photographs were taken using telescopes operated by the SLOOH observatories, which are part of the Institute of Astrophysics. One of the observatories is located in the Canary Islands near the west coast of Africa. That telescope is located at an elevation of 2,300 meters on the island of Tenerife. The instrument has a focal length of 3,910mm, an aperture of 356mm, and is a Celestron unit of Schmidt-Cassegrain design. The other observatory is located near Santiago, Chile. That telescope is the same model as the unit located in the Canary Islands. The methods used to calibrate the instruments of the SLOOH observatories are unknown to this author.

The camera used most frequently was a CCD SBIG 10XME, but some photographs were taken using a CCD SBIG 2000XM.

The photographs were analyzed by the author using the programs CCD Soft v5 and SKY 6. The two programs are products of Software Bisque.

After accumulating the photographs, averages were calculated for the position angles and separations. All of the star patterns were compared with the data from ALADIN (part of the SIMBAD site), or with the SKY X program to insure correctness. After measuring each star and calculating the results, comparisons were made with the published data. The results are listed in the tables, which contain averages of measurements, or, in the case of a single measurement, the actual value. The statistical calculations were rounded to one decimal place in accord with significant figure rules.

Report

The following information was reported for each

star: the WDS code with components, the discoverer code, the constellation, the position angle, the separation, the date of the last observation, and, under measures by the author, the results of other authors. The number of measurements, and the WDS values were taken from the WDS on the last observation date.

The column headings are: Washington Double Star identifier and components, DC = Discovery Code, PA = position angle, SD = standard deviation, SE = standard error of the mean, Sep = Separation, Mts = number of measurements, Con = Constellation, and the last observation date.

References

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OAG Catalog as published by the United States Naval Observatory on their website

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Tycho-2 Catalog as published on their website

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
02145+5912 AB	STI 1812	58.6	0.5	0.3	10.8	0.3	0.1	3	CAS	2016.7066
WDS		41			8.0					1908
WDS		59			10.7			9		2012

Other identifiers: CCDM J02145+5912A, IDS 02074+5844A, 2MASS J02142896+5912231

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
04480+5307 AB	STF 587	185.8	0.3	0.2	20.9	0.1	0.1	3	CAM	2016.7367
JDSO (Bertoglio)		186			21					2010
Tycho-2		186			20.8					1991
WDS		185			19.6					1882
WDS		188			21.2			30		2013

Other identifiers: ADS 3442 A, BD+52 880, SAO24835, TYC 3733-656-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
05463+3152 AB	SEI 384	176.2	0.7	0.4	14.0	0.2	0.1	4	AUR	2016.7751
JDSO (Berkó)		354.4			13.9					2009
OAG		355.5			13.7					1982
WDS		171			15.3					1899
WDS		174			13.9			9		2007

Other identifiers: TYC 2405-337-1, CCDM J05463+3152B, 2MASS J05461620+3152206

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
06084+2048 AB	AZC 48	27.8	1.4	0.7	25.2	0.2	0.1	4	ORI	2016.6190
WDS		27.0			25.1					1997
WDS		27.0			25.2			2		2000

Other identifiers: HD 252131

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
06324+1312 AB	AG 326	3.8	2.2	0.6	24.0	0.1	0.1	13	GEM	2015.1433
JDSO (Schlimmer)		4			23.9					2009
Webb		4.1			23.4					1982
WDS		120			1.5					1871
WDS		4			23.5			4		1999

Other identifiers: AG+13 604, BD+13 1296, GSC00745-00517, SAO95802, TYC 745-517-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
07082-0151 AB	J 2781	6.4	0.3	0.1	25.1	0.1	0.1	6	MON	2015.3158
JDSO (Berkó)		9.1			25.8					2009
WDS		10			25.8					1893
WDS		9			25.9			8		2008

Other identifiers: CCDM J07082-0152A; GSC 04185-02431; IDS 07031-0142A

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
07144-1519 AB	ROE 26	121.3	1.3	0.7	10.4	0.1	0.1	4	CMA	2016.8463
JDSO (Nugent)		120.5			8.7					2016
WDS		119			8.0					1910
WDS		121			8.7			7		2016
07144-1519 AC	ROE 26	50.6	0.7	0.3	52.4	0.3	0.1	4	CMA	2016.8463
OAG		52			51.4					1982
WDS		50			41.3					1910
WDS		51			52.5			6		2016

Other identifiers:: BA-15 1715, CCDM J07144-1519A, TYC 5965-917-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
07426+0330 AB	BAL 2303	118.0	0.7	0.4	7.9	0.1	0.1	3	CMI	2016.8463
WDS		113			10.8					1910
WDS		118			8.0			6		2013

Other identifiers:: none

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
07493+0148 AB	BAL 1820	178.7	0.3	0.2	13.1	0.1	0.1	4	CMI	2016.8463
OAG		189.6			9.4					1983
WDS		205			13.1					1910
WDS		179			13.1			9		2015

Other identifiers:: none

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
07549+0039 AB	BAL 1122	91.0	0.3	0.1	10.8	0.1	0.1	6	CMI	2016.8463
JDSO (Nugent)		89.1			10.7					2016
WDS		90			10.9					1893
WDS		89			10.4			8		2015

Other identifiers: none

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08009+0111 AB	BAL 1419	327.6	1.1	0.5	15.2	0.4	0.2	4	CMI	2016.8463
WDS		330			14.4					1909
WDS		328			14.9			8		2015

Other identifiers:: none

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08026+1309 AB	SLE 320	43.7	0.2	0.1	22.1	0.1	0.0	3	CNC	2016.0441
WDS		44			22.7					1984
WDS		44			22.1			8		2016
08026+1309 AC	SLE 320	221.6	0.1	0.1	52.3	0.1	0.0	3	CNC	2016.0441
OAG (Minet)		220.9			52.2					1984
WDS		221			52.2					1984
WDS		222			52.3			7		2016
08026+1309 AD	SLE 320	239.0	0.1	0.1	51.2	0.1	0.0	3	CNC	2016.0441
OAG (Minet)		238.0			50.7					1984
WDS		238			50.3					1984
WDS		239			51.2			9		2016
08026+1309 CD	SLE 320	324.3	0.1	0.0	15.7	0.1	0.0	3	CNC	2016.0441
OAG (Minet)		323.9			15.2					1984
WDS		323			15.3					1984
WDS		324			15.7			10		2016

Other identifiers:: GSC 00793-00111, TYC 793-111-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08213-1335 AB	J 2876	158.2	1.0	0.6	5.1	0.1	0.0	3	PUP	2016.1645
WDS		177			11.6					19.2
WDS		156			5.2			6		2007
08213-1335 AC	J 2876	36.6	0.8	0.5	13.7	0.5	0.2	5		2016.1645
WDS		32			14.6					1902
WDS		37			13.7			7		2007

Other identifiers:: none, not in SIMBAD, not in Aladin

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08273+0139 AB	BAL 1425	148.6	0.1	0.0	15.3	0.1	0.0	4	HYA	2016.1262
WDS		162			12.1					1910
WDS		150			15.2			7		2000

Other identifiers:: not in SIMBAD

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08434+0340 AB	BAL 2821	83.0	0.4	0.2	10.0	0.1	0.0	4	HYA	2016.1262
OAG (Minet)		86.1			9					1982
WDS		86			8.2					1910
WDS		82			10.1			6		2008

Other identifiers: TYC 215-2231-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08459-0643 AB	HJ 796	123.3	1.8	0.8	22.5	0.2	0.1	5	HYA	2016.1262
WDS		140			12.0					1827
WDS		124			21.5			11		2011

Other identifiers:: BD-06 2718, CCDM J08459-0643A; SAO136252, TYC 4876-1124-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08462+1915 AB	STF 1269	308.7	0.2	0.1	11.4	0.1	0.0	3	CNC	2016.0441
OAG (Comellas)		308.0			11.0					1980
WDS		308			11.5					1827
WDS		309			11.4			17		2016

Other identifiers:: BD-+19 2100; GSC 01396-01217; SAO 98108; TYC 1396-1217-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
08505+0333 AB	BAL 2351	110.0	1.1	0.5	14.2	0.2	0.1	4	HYA	2016.1645
WDS		101			10.9					1899
WDS		108			13.9			8		2010

Other identifiers:: BD+04 2054; GSC 00216-01133; SAO 117186; TYC 216-1133-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
09216-0243 AB	FIL 21	2.5	0.4	0.2	11.0	0.1	0.1	4	HYA	2016.1645
JDSO (Buchheim)		2.2			11.2					2008
WDS		0			13.2					1897
WDS		2			11.1			9		2010

Other identifiers:: RAVE J092130.4-024146; TYC 4884-442-1

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
10084-1945 AC	BU 911	54.2	0.7	0.3	83.4	1.2	0.6	4	HYA	2016.1481
OAG		55			79.5					1980
WDS		83			47.3					1880
WDS		55			78.4			18		1999

Other identifiers: BD-19 2926; HD 87998; HIP 49668; SAO 155757; TYC 6067-598-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
13267-2418 AB	BGH 6	268.1	0.1	0.0	319.0	0.8	0.4	4	HYA	2016.5232
WDS		268.0			319.4					1933
WDS		268.0			319.4			14		2015

Other identifiers:: CCDM J13267-2418A; HD 116858; IDS 13211-2346A; SAO 181657; TYC 6713-183-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
13433-2458 AB	HJ 2671	66.3	0.3	0.2	27.8	0.1	0.1	3	HYA	2016.5232
JDSO (Nugent)		66.8			27.4					2014
OAG		71			29.0					1973
Tycho 2		67.1			27.4					1991
WDS		76			25.0					1831
WDS		67			27.4			16		2013

Other identifiers:: BDS 6595A; HD 119375; IDS 13378-2428A; SAO 181899; TYC 6719-378-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
19170+0144 AB	BAL 1516	271.8	0.2	0.3	10.7	0.1	0.1	3	AQL	2016.6820
OAG		271.6			9.2					1983
WDS AB		269			12.0					1909
WDS AB		272			11.2			10		2011

Other identifiers:: TYC 464-592-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
19303+0419 AB	BAL 2943	288.1	0.5	0.3	11.8	0.2	0.1	3	AQL	2016.6847
OAG		286			12					1980
WDS		288			10.3					1910
WDS		286			11.7			8		2010

Other identifiers:: BD+04 4128; HD 183617; IDS 19254+0407B; PPM 167993

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
19377-0958 AB	LV 21	<i>284.1</i>	<i>0.1</i>	<i>0.1</i>	<i>84.1</i>	<i>0.2</i>	<i>0.1</i>	4	AQL	2016.7066
JDSO (Curelaru)		285.4			86.5					2011
OAG (Tobal)		284.1			84					1984
WDS		287			83.9					1900
WDS		285			86.5			9		2010

Other identifiers: BD-10 5137; CCDM J19377-0958A; SAO 162829; TYC 5727-2380-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
19534+3934 AB	MLB 946	<i>221.3</i>	<i>1.2</i>	<i>0.6</i>	<i>5.1</i>	<i>0.1</i>	<i>0.1</i>	4	CYG	2015.8989
Webb (Soon)		216			5.4					2006
WDS		221			4.9					1934
WDS		219			5.6			5		2014

Other identifiers: BD+39 3945; HD 226382; HIP 97875; SAO 69035; TYC 3141-1667-1 1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
20055+5800 AB	A 866	<i>182.1</i>	<i>0.1</i>	<i>0.1</i>	<i>44.3</i>	<i>0.7</i>	<i>0.3</i>	5	CYG	2016.5396
WDS		180.0			31.1					1904
WDS		172			44.9			7		2015

Other identifiers: ADS 13385 AB; GEN#+1.00239319J

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
20105+3635 AB	SEI 948	<i>87.7</i>	<i>1.5</i>	<i>0.7</i>	<i>21.7</i>	<i>0.1</i>	<i>0.1</i>	5	CYG	2016.5424
OAG (Tobal)		87.8			21.9					1993
WDS		89.0			21.5					1896
WDS		87.0			21.5			7		2010

Other identifiers: GSC 02683-00666; IDS 20068+3617A; LF3a +36 34

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
20127+3645 AB	SEI 1006	<i>305.5</i>	<i>0.8</i>	<i>0.4</i>	<i>17.1</i>	<i>0.3</i>	<i>0.1</i>	4	CYG	2016.5369
JDSO (Micello)		306.0			17.0					2001
OAG (Tobal)		304.3			17.1					1993
WDS		307.0			17.1					1896
WDS		307.0			17.1			6		2010

Other identifiers: CCDM J20127+3645A; IDS 20090+3627A

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WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
20160+2929 AB	MLB 478	13.1	0.4	0.2	6.3	0.2	0.1	4	CYG	2016.5478
Webb (Soon)		12.9			7					2006
WDS		0			6.3					1894
WDS		13			7.0			6		2006

Other identifiers: HD 333973

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
20324+3859 AB	SEI 1157	65.5	0.2	0.1	7.6	0.2	0.1	3	HYA	2015.9893
WDS		66			7.4					1895
WDS		65			7.6			4		2002

Other identifiers:: TYC 3153-471-1

WDS number/Comp	D.C.	P.A.	SD	SM	SEP	SD	SM	Mts	Con	Date
23280+4301 AB	CHE 481	280.7	0.3	0.1	15.6	0.3	0.1	7	AND	2016.6628
WDS		287			15.0					1911
WDS		281			15.4			8		2015

Other identifiers:: BD+42 4679; GSC 03238-00459; PPM 64265; TYC 3238-459-1

Notes:

02145+5912 This star was formerly identified as WDS02144+5945 and SMA 31.

04480+5307 In the JDSO, Bartoglio (2010) reported PA = 224.2 and Se = 16.1. In the OAG, Comellas (1973) reported PA = 175 and Se = 21. In the OAG, Schnabel (1977) reported PA = 176 and Se = 20.3. In the OAG, Comellas (1980) reported PA = 175 and Se = 21.

05463+3152 In the JDSO, Berkó (2009) reported PA = 354.4 and Se = 13.9. In the OAG, Tobal (1982) reported PA = 355.5 and Se 13.7. Given that the Separation values match, perhaps their measurements were from B to A.

07082-0151 AB While my value for the position angle is significantly different from the WDS value(6.4 versus 9), I included my measurements for four reasons: 1) the data were consistent with a standard deviation of 0.3; 2) the measurements were taken over a period of 3 months; 3) six measurements were made using VIZIER, and the average value of 6.2 was close to my value of 6.4. [Please see Richard Harshaw's article on the use of VIZIER for this function (JDSO January 2013).]; 4) the separation was close to published values, and was as consistent as was the position angle.

13267-2418 The coordinates given in SIMBAD (RA = 13 26 39.5 and DE = 24 17 36) result in the same star. Entering the WDS coordinates in SIMBAD will result in a different star. Using VIZIER for four measurements, the average PA value was 268.2, and the average Separation value was 317.3

20055+5800 The position angle differs from the WDS value by +5.86%. These 5 values are very close, and were taken over a period of 14 months.