Measurements of Neglected Double Stars: February 2018 Report

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Abstract: This article presents measurements of 53 neglected double stars. 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, and the Open Science Observatory located in the Canary Islands near the west coast of Africa. Those telescopes are located at an elevation of 2,300 meters on the island of Tenerife. The SLOOH instrument has a focal length of 3,910mm, an aperture of 356mm, and is a Celestron unit of Schmidt-Cassegrain design. The other SLOOH observatory is located near Santiago, Chile, and has a telescope of the same model as the unit located in the Canary Islands. The Open Science Observatory has a corrected Dall-Kirkham telescope with an aperture of 420mm, and a focal length of 2,940mm. The methods used to calibrate the instruments of those observatories are unknown to this author.

The camera used most frequently at the SLOOH Observatory was a CCD SBIG 10XME, but some photographs were taken using a CCD SBIG 2000XM. At the Open Sciences Observatory, a ProLine KAF-16803 camera was used.

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 Sky Atlas, 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.

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 the results of other authors. The reported WDS information was taken from the WDS as was available on the report date.

The table heading includes the WDS identifier, the constellation, and other identifiers. In most cases, the "other identifiers" represent a partial list. The column headings are: WDS number/Con = Washington Double Star identifier/Constellation code, DC = Discovery Code and components, PA = position angle, Sep = Separation, Mts = number of measurements, and the last observation date.

The dates reported herein are in the format of year, month, and day.

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
01359-1732 CET	HJ 2061	316.7	104.9	3	2017 01 01
OAG (Comellas)		301	90		1980
OAG (Minet)		316.1	101.2		1982
OAG (Tobal)		316.8	96.6		1997
OAG (Tobal)		316.8	96.7		1998
WDS		317	104.9	18	2017
04484+4611 PER	HJ 2239	163.4	13.3	3	2018 01 03
OAG (Tobal)		162.7	13.1		1983
JDSO (Williams)		164	13.5		2010
WDS		164	13.7	10	2010
04495+3914 PER	STF 594	332.1	8.8	3	2018 01 03
JDSO (Wiley)		333	9.1		2007
JDSO (Bertoglio)		331.2	9.2		2010
JDSO (Williams)		332	9.2		2010
WDS		331	9.1	19	2013
04565+0427 ORI*	BAL 2622	176.7	12.4	3	2017 01 23
WDS		178	9.3	12	2012
05267+1513 ORI	HJ 3273 AB	47.2	12.0	3	2017 11 23
JDSO (Schlimmer)		47.6	11.5		2009
WDS		48	11.9	15	2015
05267+1513 ORI	FYM 218 AC	335.4	18.5	3	2017 11 23
WDS		335	18.5	3	2015
05284-0330 ORI	BUP 80	205.7	40.9	4	2017 12 05
WDS		205	44.1	7	2014
05368-1003 ORI	GAL 391	284.4	17.6	4	2017 12 07
OAG (Tobal)		285.5	19.1		1955
OAG (Tobal)		283.8	18		1997
WDS		283	17.6	9	2015
05497+3146 AUR	SEI 390 AB	227.2	5.4	2	2017 01 01
JDSO (Berkó)		224.3	5.5		2009
WDS		224	5.5	11	2007

* Wiley reported that no B component was found.

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
05497+3146 AUR	SEI 391 AC	137.4	27.3	9	2017 02 03
JDSO (Arnold)		140.6	27.5		2009
JDSO (Berkó)		140.6	27.5		2009
WDS		141	27.5	9	2007
05498+3127 AUR	SEI 392 AB	309.0	8.6	3	2017 02 03
JDSO (Arnold)		308.2	8.8		2009
JDSO (Berkó)		308.2	8.8		2009
JDSO (Wiley)		307	11.1		2006
WDS		308	8.8	7	2001
05523+3442 AUR	GYL 87	326.9	10.3	3	2017 04 13
JDSO (Arnold)		326.9	10.4		2009
JDSO (Berkó)		326.9	10.4		2009
WDS		327	10.4	7	2010
05525+3235 AUR	SEI 424 AB	274.3	13.2	2	2017 04 10
OAG (Tobal)		264.6	13		1983
WDS		266	13.1	14	2015
05526+3232 AUR	SEI 426 AB	176.8	24.8	3	2017 04 13
OAG (Tobal)		177.1	24.75		1982
WDS		177	24.9	9	2015
05557+3127 AUR	SEI 440	333.2	13.85	3	2017 09 10
JDSO (Arnold)		332.9	13.9		2007
JDSO (Berkó)		332.9	14		2007
OAG (Tobal)		334	13.8		1982
WDS		333	13.7	7	2010
05559+3104 AUR	SEI 442	186.5	25.2	3	2017 11 30
JDSO (Berkó)		186.2	25.2		2007
WDS		187	25.6	5	2010
05589+314 AUR	SEI 450	177.8	28.8	3	2017 09 18
WDS		178	28.8	8	2010
06121+1022 ORI	HJ 720	62.4	29.5	4	2017 12 08
OAG (Comellas)		62	30		1980
JDSO (Knapp)		62	30.1		2015
OAG (Minet)		61.6	29.5		1982
WDS		62	29.5	12	2010
06318+0229 MON	SLE 291	280.4	18.6	5	2017 04 12
JDSO (Schlimmer)		280.2	12.8		2013
WDS		282	12.8	2	2012
06502+0057 MON	BAL 1347	113.1	19	5	2017 02 03
OAG (Minet)		112.8	19.2		1984
JDSO (Carro)		113.1	19.1		2015
WDS		113	19.1	7	2014

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
07082-0151 MON	J 2781 AB	6.0	25.3	5	2017 01 20
OAG (Minet)		6	24.3		1983
WDS		6	25.1	9	2015
07098-0211 MON	BAL 137	4.5	12.5	4	2017 04 12
JDSO (Berkó)		4.75	12.35		2009
WDS		4	12.7	7	2010
07105-0306 MON	BAL 143 AB	28.6	12.0	3	2017 04 12
JDSO (Berkó)		28.3	12.0		2009
WDS		28	12.0	6	2008
07105-0306 MON	BKO 497 DE	64.3	10.5	3	2017 04 12
WDS		65	10.1	4	2008
07105-0306 MON	BKO 497 DF	125.3	10.5	4	2017 04 12
WDS		127	10.3	4	2008
07119-0130 MON	BAL 441 AB	33.3	14.4	3	2017 01 01
JDSO (Berkó)		33.4	14.3		2009
JDSO (Berkó)		33.7	14.4		2009
WDS		34	14.3	9	2017
07153-0033MON	ROE 27 AC	49.4	55.8	3	2017 04 12
WDS		50	57.0	7	2010
07153-0033 MON	ROE 27 AD	130.1	117.1	3	2017 04 12
WDS		130	120.0	5	2010
08506+1211 CAN	CHE 115	250.7	15.0	1	2017 01 20
WDS		251	14.7	4	2000
12232-6314 CRU	TOB 66 AB	325.9	22.4	4	2017 01 23
OAG (Tobal)		325.3	22.5		1997
WDS		325	22.5	8	2015
12232-6314 CRU	TOB 66 AC	88.4	7.2	4	2017 01 23
OAG (Tobal)		89.6	6.7		1997
WDS		88	6.6	4	2015
19160+1610 AQL	STT 368 AC	104.9	15.2	5	2016 09 16
JDSO (Knapp)		108.1	15.8		2016
WDS		106	15.6	8	2015
19246+0432 AQL	BAL 2940	243.4	18.7	7	2017 07 19
WDS		246	18.4	6	2010
19302+0254 AQL	STF 2532 AC	196.9	119.4	6	2016 09 25
WDS		196	121.8	9	2011
19325+1110 AQL	TOR 15	105.2	8.8	6	2017 07 19
WDS		106	8.9	5	2011
19459+3501 CYG	H 5 137 AB	26.4	38.9	3	2017 09 04
JDSO (Berkó)		26	39.1		2008
WDS		25	38.7	46	2016

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
19459-3501 CYG	BOT 3 AC	76.3	443.8	3	2017 09 04
JDSO (Berkó)		75.9	445.7		2008
WDS		76	442.9	11	2015
19459+3501 CYG	ACA 1 AD	37.5	224.8	3	2017 09 04
WDS		37	224.4	8	2015
20059+3157 CYG	SEI 852	254.7	44.8	5	2017 07 10
WDS		254	44.7	3	2014
20122+1534 AQL	CHE 187 AB	17.6	17.5	3	2017 07 10
JDSO (Arnold)		18	18		2009
WDS		18	18	6	2008
20123+1501 AQL	CHE 192	5.3	24.9	3	2017 07 19
WDS		5	24.9	7	2010
20127+1508 AQL	CHE 196	51.2	11.3	3	2017 07 21
JDSO (Arnold)		52	12		2009
OAG (Tobal)		49	11		1982
WDS		52	11.5	7	2016
20129+1441 AQL	CHE 204	168.9	30.8	3	2017 07 23
JDSO (Arnold)		169	31		2009
WDS		169	30.9	7	2008
20136+1537 AQL	CHE 215	94.6	32.4	3	2017 08 29
JDSO (Berkó)		95.2	32.8		2009
OAG (Tobal)		94.1	31.8		1982
WDS		95	32.8	5	2008
20139+1529 AQL*	CHE 220	41.6	37.2	4	2017 08 29
JDSO (Berkó)		41.7*	37.3		2009
WDS		42	37.3	5	2008
20141+3617 CYG	SEI 1031	61.4	18.6	10	2016 08 05
OAG (Tobal)		61.5	18.9		1983
WDS		60	19	10	2006
20365-0311 AQL	TOR 26	75.2	16.5	4	2017 08 28
WDS		74	16.4	7	2011
21044+3551 CYG	SEI 1390	343.2	17.4	3	2017 09 05
OAG (Tobal)		344.2	17.2		1983
WDS		343	17.7	6	2013
21055+5340 CYG	BU 680 AC	32.7	20.7	4	2017 09 05
JDSO (Vollmann)		32.6	20.8		2008
WDS		33	20.8	13	2007

* It appears that the measurement taken by Berkó was from B to A. When 180° is subtracted from his reported number, the result is a position angle of 41.7°.

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
21125-2241 CAP	WHC 22 AB	169.8	6.7	2	2016 11 05
WDS		169	6.8	22	1999
21125-2241 CAP	TOB 35 AC	313.8	37.1	2	2017 09 08
WDS		313	36	8	1999
21156+3314 CYG	GYL 51	101.5	43.1	3	2017 09 06
WDS		102	43.0	7	2012
21157+3235 CYG	HJ 1628	251.6	15.1	4	2017 12 07
JDSO (Jones)		251.7	15.2		2008
OAG (Tobal)		258.45	16.4		1983
TYCHO -2		251.9	15.2		1991
WDS		252	15.3	19	2016
21190+3905 CYG	SEI 1498 AB	88.7	28.9	3	2017 09 06
WDS		91	29.0	8	2012
21190+3905 CYG	TOB 220 BC	74.5	12.5	3	2017 09 06
WDS		75	12.5	3	2002
21215+5434 CYG	ROE 91 AC	187.4	47.5	2	2017 09 06
WDS		188	47.6	4	2012
21215+5434 CYG	ROE 91 AD	274.9	74.4	2	2017 09 06
WDS		275	74.7	3	2003
21308+4013 CYG	MLB 896 AC	69.3	29.0	4	2017 12 05
WDS		68	29.2	3	2007
21308+4827 CYG	A 770 AB-D	14.6	98.9	3	2017 12 05
JDSO (Nugent)		14.4	97.5		2015
WDS		14	97.5	10	2013
21336+3325 CYG	TOB 222 AB	119.2	20.8	3	2017 09 06
WDS		119	21.0	12	2016
21336+3325 CYG	TOB 222 AC	335.4	22.1	3	2017 09 06
WDS		335	22.3	7	2016
21336+3325 CYG	TOB 222 AD	68.0	26.4	3	2017 09 06
WDS		68	26.4	7	2016
21336+3325 CYG	GYL 59 BD	16.9	21.0	3	2017 09 06
WDS		17	21.4	6	2006
21348+3304 CYG	GYL 61 AB	188.3	47.6	4	2017 12 07
WDS		188	47.6	8	2011
21378+3739 CYG	SEI 1527 AB	332.1	25.5	3	2017 09 18
JDSO(Buchheim)		332	25.2		2008
JDSO(Malsbury)		330	25.3		2014
OAG (Tobal)		331.5	25.9		1983
WDS		332	25.1	8	2014

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WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
21426+4226 CYG	STF 2820 AB	230.1	16.0	3	2017 12 07
JDSO(Arnold)		232.9	16.3		2010
OAG (Tobal)		235.8	16.3		1983
Tycho-2		230.9	16.2		1991
WDS		233	16.3	14	2012
21426+4226 CYG	BU 1505 AC	200.0	33.6	3	2017 12 07
WDS		200	33.3	5	2012
21426+4226 CYG	BU 1505 BC	177.2	21.4	3	2017 12 07
WDS		174	21.9	4	2012
23435+5805 CAS	ENG 88 AB	214.5	170.6	3	2017 09 04
OAG (Tobal)		200.6	106.7		1984
Tycho-2		214	151.2		1991
WDS		215	165.5	11	2012
23435+5805 CAS	ENG 88 AC	165.4	146.7	3	2017 09 04
OAG (Tobal)		144.7	166.3		1984
Tycho-2		160.1	135.7		1991
WDS		164	144	11	2012
23435+5805 CAS	ENG 88 AD	197.9	228.9	3	2017 09 04
WDS		197	227.0	12	2012
23435+5805 CAS	ENG 88 AE	147.2	167.4	3	2017 09 04
WDS		145	168.0	10	2012
23435+5805 CAS	ENG 88 AF	197.2	281.0	3	2017 09 04
WDS		197	277.4	11	2012

Problem star:

20365-0311 Aquila Other identifiers: TYC 5180-2427-1

NOTE: NOT listed in the current WDS, OAG, or JDSO. Using the TYC number, SIMBAD reports a single star.

WDS number/Con	Dis. Code	Position Ang.	Separation	Measures	Date
20365-0311	PAN 23	227.3	14.4	3	2017 08 29

The measurements given above were based on the image from Aladin. Listed in the current WDS is 20365-0311 TOR 26. Listed in the Neglected Equatorial Double Stars is 20365-0311 PAN 23 .

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