



Orbital elements of double stars: ADS 7435 and ADS 7785

Josefina Ling, Marco Scardia, Jean-Louis Prieur, Luigi Pansecchi, Robert W. Argyle, Alessio Zanutta, Eric Aristidi, Abe Liu, Philippe Bendjoya, Cécile Combier-Dimur, et al.

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INTERNATIONAL ASTRONOMICAL UNION
COMMISSION G1 (BINARY AND MULTIPLE STAR SYSTEMS)
DOUBLE STARS INFORMATION CIRCULAR No. 192 (JUNE 2017)

NEW ORBITS

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2017 2018	Author(s)
207 00162+7657	STF 13 0°2890	1245 ^y 6 1"078	3048.6 140°7	0.472 287°6	86°1 2016.7850	48°5 0"956 48.3 0.957	MASON & HARTKOPF
884 01048+0135	A 2310 1.8462	195.0 0.212	1936.4 130.0	0.730 351.7	124.3 2008.7726	314.6 0.351 314.3 0.353	DOCOBO & LING
- 02104-5049	ESG 1 1.0540	341.5 4.393	2000.5 125.4	0.49 306.4	79.6 2012.2468	80.1 2.574 78.6 2.611	MASON & HARTKOPF
- 08269+3212	HU 714Ba,Bb 1.8410	195.5 0.535	1943.2 72.4	0.567 3.7	135.9 2009.0625	312.4 0.787 312.6 0.792	MASON & HARTKOPF
7435 09349+0515	A 2757 1.4331	251.2 0.322	2065.5 132.4	0.192 99.8	58.7 2017.148	53.0 0.310 52.0 0.308	LING et al (*)
7785 10287+4558	A 1993 0.1685	2137. 2.046	1991. 52.6	0.822 29.1	124.3 2017.268	219.1 0.296 221.8 0.302	LING et al (*)
9547 15136+3453	HO 60 1.8404	195.61 0.314	1972.18 107.6	0.562 163.5	37.7 2009.4413	61.5 0.235 60.7 0.243	DOCOBO & CAMPO
- 15317+0053	TOK 48 212.2642	1.696 0.042	2006.183 160.5	0.406 223.2	171.4 2015.4967	150.3 0.056 338.4 0.026	DOCOBO & CAMPO
10230 16514+0113	STT 315 0.3636	990. 1.556	1976.7 114.3	0.798 82.5	133.7 2014.658	309.4 0.737 309.0 0.747	DOCOBO & LING
11667 18465-0058	MCA 53Aa,Ab 8.7209	41.28 0.103	2012.50 127.3	0.666 358.0	164.8 2014.3038	32.7 0.062 23.8 0.076	DOCOBO & CAMPO
12126 19110-0726	A 95 3.3111	108.72 0.246	1944.25 129.7	0.647 253.2	115.2 2015.5409	23.1 0.237 21.4 0.235	DOCOBO & CAMPO

NEW ORBITS (continuation)								
ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)	
- 19264+4928	YSC 134 788.1256	0.4568 0.026	2012.4410 138.0	0.137 243.2	25.1 2014.5640	159.4 0.019 57.7 0.023	DOCOBO et al (**)	
12469 19282-1209	SCJ 22 2.1154	170.2 1.003	1983.91 10.4	0.584 308.	206. 2016.5529	289.6 1.113 290.9 1.131	MASON & HARTKOPF	
13135 19549+5049	HU 687 2.3286	154.6 0.159	1960.63 36.2	0.321 218.9	28.9 2008.639	38.2 0.198 39.4 0.199	DOCOBO & CAMPO	
13738 20213+0250	HLD 158 1.5493	232.4 0.858	1961.16 128.6	0.746 17.7	218.3 2016.8750	42.0 1.198 41.7 1.209	MASON & HARTKOPF	
- 22329+5348	KUI 112Aa,Ab 6.8650	52.44 0.495	2022.70 38.4	0.677 301.2	123.8 2008.648	303.1 0.419 309.3 0.370	DOCOBO & LING	
16457 23020+4800	A 194 3.4522	104.28 0.206	1990.26 94.7	0.079 151.6	108.0 2008.631	273.1 0.063 269.5 0.052	DOCOBO & LING	
16672 23191-1328	MCA 74 Aa,Ab 56.9530	6.321 0.188	2012.286 45.5	0.193 29.5	340.7 2014.7632	260.0 0.138 326.0 0.156	DOCOBO et al (***)	
- 23199+2844	COU 439 5.5961	64.33 0.188	1955.87 51.4	0.314 38.1	13.4 2009.6849	15.3 0.135 22.0 0.130	DOCOBO & LING	

(*) LING, SCARDIA, PRIEUR, PANSECCHI, ARGYLE, ZANUTTA, ARISTIDI, ABE, BENDJOYA, COMBIER-DIMUR, RIVET, SUAREZ & VERNET

(**) DOCOBO, CAMPO & HORCH

(***) DOCOBO, TAMAZIAN & CAMPO

NEW LINEAR FITS

Authors: SCARDIA, PRIEUR, PANSECCHI, ARGYLE, LING, ARISTIDI, ZANUTTA, ABE, BENDJOYA, COMBIER-DIMUR, RIVET, SUAREZ & VERNET

ADS α 2000 δ	Name -	X_0 Y_0	X_A Y_A	ρ_0 θ_0	T_0 Last ob.	2017 2018
739 00542+5108	HU 1018 -	0.2539267 -0.6951196	0.0072018 0.0026302	0.740 20.07	1941.767 2015.940	58°0 0"938 58.4 0.943
3593 05013+5015	STF 619 -	1.9510580 3.7003640	-0.0211175 0.0117062	4.183 152.20	1993.235 2016.037	160.0 4.234 160.3 4.238
8708 12564-0057	STT 256 -	0.3953297 -0.4240143	0.0034690 0.0032338	0.580 42.99	1824.086 2017.383	100.6 1.083 100.8 1.087
9952 16115+1507	A 1799 -	-0.0118427 0.3311701	0.0066318 0.0002413	0.331 182.05	1906.076 2017.383	116.3 0.807 116.1 0.814
10648 17354+1322	A 1879 -	0.2362047 -0.1663343	0.0029091 0.0041279	0.289 54.85	1926.771 2016.616	112.5 0.540 112.7 0.544

NEW DOUBLE STARS

Discovered by: André Amossé using a ZWO ASI camera 290 MMc attached to the 33 cm diameter refractor of the Lille Observatory

STAR	Precise Coord.	UCAC4	Mag.	Epoch	θ (°)	ρ (")
AMS 2	215451.222+191410.71	547-138527	10.23	2016.691	199.3	6.9
	215451.056+191404.06	547-138526	10.23			
AMS 3	074245.977+040414.93	HD6 2161	7.95	2017.236	159.4	19.10
	074246.391+040356.61	471-034418	12.41			
AMS 4	062305.640+250510.80	576-028537	10.17	2017.326	262.5	8.2
	062305.037+250509.66	576-028533	10.12			
AMS 5	124040.962+071958.74	487-053873	11.28	2017.326	1.2	12.1
	124040.980+072010.74	487-053874	12.89			

NEW DOUBLE STARS

Discovered by A. Debackère using LCOGT global telescope network.

- FTN : Faulkes Telescope North T2m, Haleakala, Hawaii, LCOGT
- FTS : Faulkes Telescope South T2m, Siding Spring, Australia, LCOGT

STAR	Precise Coord.	UCAC4 USNO-B1.0	Mag.	Epoch	θ ($^{\circ}$)	ρ ($''$)	Obs
DBR 244	081058.66+280722.3	591-044393	4.75 14.0	2016.978	138.7	17.2	1FTS,9FTN
DBR 245	152235.57+560342.4	731-053126	1.84 13.9	2017.100	219.9	16.7	1FTN
DBR 246	153223.28+562750.0	<u>1464-0260501</u>	3.11 17.1	2017.114	306.0	17.8	1FTN
DBR 247	153207.13+562744.6	733-056033	5.82 16.4	2017.114	281.5	16.8	1FTN
DBR 248	153636.30+461133.9	681-056532	9.21 15.0	2017.114	272.6	15.1	1FTN
DBR 249	153642.04+463211.4	<u>1365-0254918</u>	7.99 17.5	2017.114	69.7	17.5	1FTN
DBR 250	153734.15+461441.4	682-055398	5.12 15.3	2017.114	62.8	17.9	1FTN
DBR 251	153758.93+462140.4	682-055406	9.11 13.1	2017.114	175.8	16.2	1FTN
DBR 252	153741.66+461942.0	682-055401	9.80 13.2	2017.114	246.7	14.7	1FTN
DBR 253	153746.43+462542.3	<u>1364-0255182</u>	4.07 18.1	2017.114	99.4	19.1	1FTN
DBR 254	153748.71+462359.2	<u>1363-0253692</u>	5.79 16.8	2017.114	263.0	18.0	1FTN
DBR 255	153756.89+463357.2	683-058173	6.51 15.5	2017.114	161.9	17.2	1FTN
DBR 256	153813.45+462820.7	683-058178	7.90 16.0	2017.114	42.8	16.8	1FTN
DBR 257	153859.66+461050.9	<u>1350-08675105</u>	3.41 17.3	2017.114	64.0	18.4	1FTN
DBR 258	165152.58-375022.4	<u>0521-0579060</u>	1.57 16.5	2017.150	309.6	17.8	1FTS
DBR 259	165156.20-375058.5	261-104581	3.14 12.3	2017.150	196.3	16.5	1FTS
DBR 260	165154.48-375640.3	261-104572	3.29 15.4	2017.152	134.2	16.4	2FTS
DBR 261	165201.35-375347.7	261-104612	3.37 14.5	2017.152	124.9	17.1	2FTS
DBR 262 AB	165202.56-375131.8	261-104618	6.09 14.5	2017.152	348.2	15.3	2FTS
DBR 262 AC	165202.56-375131.8	261-104618	4.17 14.5	2017.152	182.2	16.4	2FTS
DBR 263	165202.65-375103.6	261-104620	3.88 13.9	2017.152	350.1	15.9	2FTS
DBR 264	165207.78-375134.3	261-104653	1.69 14.7	2017.156	34.6	-	1FTS
DBR 265	165207.81-375037.7	261-104654	1.35 14.7	2017.150	287.2	15.0	1FTS
DBR 266	165210.67-375136.1	261-104668	2.94 15.3	2017.152	25.3	16.8	2FTS
DBR 267	165217.07-375638.1	261-104698	4.56 15.0	2017.152	359.7	16.2	2FTS
DBR 268	165218.18-375647.7	261-104705	4.85 12.3	2017.512	147.6	15.8	2FTS
DBR 269	165225.62-375400.5	261-104745	2.10 16.3	2017.512	179.7	16.4	2FTS
DBR 270 AB	165229.32-375825.4	261-104763	1.38 15.1	2017.510	202.0	15.8	1FTS
DBR 270 AC	165229.32-375825.4	261-104763	2.45 15.1	2017.510	351.6	16.5	1FTS
DBR 271	165233.49-375005.7	261-104787	1.56 16.6	2017.510	167.2	17.0	1FTS

ANNOUNCEMENTS

ON CONVERSION FROM BESSELIAN EPOCH TO JULIAN EPOCH

Despite IAU resolutions (1) recommending that observations be published using dates given in Julian epochs, classic double star data have primarily been published with the date of observation given in fractional Besselian years. More recent data has a much greater probability of being published in fractional Julian years. The ambiguity of the fractional year is an untenable situation, especially for orbit computation of short period pairs, and the difference between the Besselian epoch and the Julian epoch is increasing. We are in the process of evaluating the 9341 references used in the compilation of the WDS and adjusting the observation epoch from BE to JE when appropriate. Accordingly, the measures in the WDS are being converted from Besselian to Julian epoch when the published precision warrants it, using the IAU approved conversion,

$$JY = (BY \times 0.999978641) + 0.041439661$$

(1) IAU, 1977, Proceedings of the Sixteenth General Assembly, Grenoble 1976, Trans. IAU, XVIB (Dordrecht: Reidel)

Brian D. Mason & William I. Hartkopf

THE WASHINGTON DOUBLE STAR SUPPLEMENTAL CATALOG (v 2017.06.08)

The Washington Double Star Supplemental Catalog (WDSS) is a database intended for large, faint duplicity surveys. This initial version only contains the 105,000-pair SDSS survey by Dhital et al. (2015 AJ 150, 57), with additional matches of some pairs against 2MASS. However, it is expected to grow significantly as future data releases from Gaia, PanStarrs, etc. lead to ever-larger-scale duplicity surveys.

The WDSS is also meant to be a means of testing possible new formats for the main WDS database, so the format of this catalog must be considered preliminary. The increasing number of pairs in the WDS have occasionally exposed the limitations of its current format. In particular, the WDS designation, based on arcminute-precise coordinates, has insufficient precision to give unique designations to pairs discovered in crowded fields. WDS summary lines also have insufficient space for cross-reference names for the primary, and no space for coordinates or other names for the secondary. Space is also limited for component designations, magnitudes, spectral types, and proper motions.

The initial format for the WDSS attempts to address some of these shortcomings:

1. The system designation has been expanded from 10 to 14 characters, and is now based on the arcsecond-precise coordinates of the primary. This format is common to many other contemporary catalogs.
2. The component field now accepts designations up to seven characters in length (e.g., the designation “Aa1,Aa2” used for a very close pair in a higher-order hierarchical systems), as opposed to the five-character limit in the WDS.

- Both visual and infrared magnitudes are included (with flags for data taken with filters other than the default V and K).
- Space has been expanded for spectral types of each component, as well as proper motions.
- A column has been added for parallax
- More space is available for alternate names for both components
- Space is given for precise coordinates of the secondary.

In order to accomodate this additional information, the summary line has been split into two lines. (Note that this applies only to the plain-text version of the database. An SQL-type database - not yet implemented - could of course continue to use a single summary line per pair.) An example of the WDSS format is given below. The layout is similar to that of the WDS (especially measurement lines, which are virtually identical other than the WDS-vs-WDSS designation). Detailed formats for both summary and measurements lines are given in the file `wdss_format.txt`. The final three columns (as-yet unused) are at present reserved for any pairs found to be common to both the WDSS and the WDS. Eventually they will give a cross-reference between the new-and old-format WDS catalogs.

This format is by NO means “written in stone”! Suggestions for improvement are welcome from all users of the USNO double star catalogs.

wdss.....	compl..	frst nnn	th1 rho1..*	vmag1*	kmag1*	spec1	pm1.....	par1...	name1.....	** coords1.....	wdss.....	dd.....	comp.
wdss.....	comp2..	last	th2 rho2..*	vmag2*	kmag2*	spec2	pm2.....	par2...	name2.....	coords2.....			
wdss.....	comps...	date.....	*the....	dthe..	*rho.....	*dsep...	*mag1..*	*dmag..	*mag2..*	*dmag..	*filt....	*tel..*	nn ref.....
...	...	...	...	...	...	...	...	...	...	...	...	...	te
0000004+054750	A	2008	1	25	13.17	20.87g	.	K7	.	SLW 0000+0547	V 000000.44+054750.7		
0000004+054750	B	2008	25	13.17	22.08g	.	M1	.	.	.	000000.82+054802.6		
0000004+054750	AB	2008.8151	25.	.	.	13.17	.	.	26.285 0.449	24.040 0.985	355 120	2.5	1 Dhi2015 Es
0000004+054750	AB	2008.8151	.	.	.	.	.	.	20.868 0.038	22.083 0.103	477 280	2.5	1 Dhi2015 Es
0000004+054750	AB	2008.8151	.	.	.	.	.	.	19.479 0.017	20.531 0.038	623 280	2.5	1 Dhi2015 Es
0000004+054750	AB	2008.8151	.	.	.	.	.	.	18.844 0.017	19.688 0.033	762 300	2.5	1 Dhi2015 Es
0000004+054750	AB	2008.8151	.	.	.	.	.	.	18.447 0.037	19.120 0.065	913 240	2.5	1 Dhi2015 Es
000010+151505	A	1998	2	211	4.13	20.09g	14.63	M1	.	SLW 0000+1515	V 000001.06+151505.1		
000010+151505	B	2000	212	4.08	16.54g	13.46	K2	+0031.	+0018.	2MASS J00000091+1515015	000000.92+151501.7		
000010+151505	AB	1998.883	211.0	.	4.12e	.	.	.	14.524 .	13.979	1256 245	1.3	1 TMA2003 E2
000010+151505	AB	1998.883	.	.	.	.	.	.	14.923 0.170	13.528 0.035	1633 160	1.3	1 TMA2003 E2
000010+151505	AB	1998.883	.	.	.	.	.	.	14.627 0.093	13.456 0.046	2210 300	1.3	1 TMA2003 E2
000010+151505	AB	2000.7388	212.	.	4.08	.	.	.	22.554 0.255	18.720 0.018	355 120	2.5	1 Dhi2015 Es
000010+151505	AB	2000.7388	.	.	.	.	.	.	20.092 0.017	16.539 0.004	477 280	2.5	1 Dhi2015 Es
000010+151505	AB	2000.7388	.	.	.	.	.	.	18.271 0.008	15.635 0.005	623 280	2.5	1 Dhi2015 Es
000010+151505	AB	2000.7388	.	.	.	.	.	.	17.410 0.007	15.314 0.005	762 300	2.5	1 Dhi2015 Es
000010+151505	AB	2000.7388	.	.	.	.	.	.	16.952 0.013	15.147 0.006	913 240	2.5	1 Dhi2015 Es
0003431-075506	A	2009	1	61	9.67	21.21g	15.21	M2	.	SLW 0003-0755	V 000343.16-075506.1		
0003431-075506	B	2009	61	9.67	21.48g	15.83	M2	.	.	2MASS J00034378-0755014	000343.74-075501.5		
0003431-075506	AB	2009.7897	61.	.	9.67	.	.	.	22.374 0.457	22.927 0.731	355 120	2.5	1 Dhi2015 Es
0003431-075506	AB	2009.7897	.	.	.	.	.	.	21.206 0.048	21.480 0.061	477 280	2.5	1 Dhi2015 Es
0003431-075506	AB	2009.7897	.	.	.	.	.	.	19.865 0.024	20.040 0.027	623 280	2.5	1 Dhi2015 Es
0003431-075506	AB	2009.7897	.	.	.	.	.	.	18.648 0.013	18.829 0.014	762 300	2.5	1 Dhi2015 Es
0003431-075506	AB	2009.7897	.	.	.	.	.	.	18.092 0.028	18.207 0.031	913 240	2.5	1 Dhi2015 Es
0003431-075506	A	2009	1	92	10.08	21.21g	15.21	M2	.	SLW 0003-0755	V 000343.16-075506.1		
0003431-075506	C	2009	92	10.08	21.52g	15.56	M2	.	.	2MASS J00034383-0755065	000343.84-075506.4		
0003431-075506	AC	2009.7897	92.	.	10.08	.	.	.	22.374 0.457	26.031 0.908	355 120	2.5	1 Dhi2015 Es
0003431-075506	AC	2009.7897	.	.	.	.	.	.	21.206 0.048	21.521 0.063	477 280	2.5	1 Dhi2015 Es
0003431-075506	AC	2009.7897	.	.	.	.	.	.	19.865 0.024	19.862 0.024	623 280	2.5	1 Dhi2015 Es
0003431-075506	AC	2009.7897	.	.	.	.	.	.	18.648 0.013	18.667 0.013	762 300	2.5	1 Dhi2015 Es
0003431-075506	AC	2009.7897	.	.	.	.	.	.	18.092 0.028	18.106 0.028	913 240	2.5	1 Dhi2015 Es
0003431-075506	B	2009	1	163	5.16	21.48g	15.83	M2	.	2MASS J00034378-0755014	000343.74-075501.5		
0003431-075506	C	2009	163	5.16	21.52g	15.56	M2	.	.	2MASS J00034383-0755065	000343.84-075506.4		
0003431-075506	BC	2009.7897	163.	.	5.16	.	.	.	22.927 0.731	26.031 0.908	355 120	2.5	1 Dhi2015 Es
0003431-075506	BC	2009.7897	.	.	.	.	.	.	21.480 0.061	21.521 0.063	477 280	2.5	1 Dhi2015 Es
0003431-075506	BC	2009.7897	.	.	.	.	.	.	20.040 0.027	19.862 0.024	623 280	2.5	1 Dhi2015 Es
0003431-075506	BC	2009.7897	.	.	.	.	.	.	18.829 0.014	18.667 0.013	762 300	2.5	1 Dhi2015 Es
0003431-075506	BC	2009.7897	.	.	.	.	.	.	18.207 0.031	18.106 0.028	913 240	2.5	1 Dhi2015 Es

The database is presently divided into 4 six-hour RA bands (`wdss1.dat`, ... `wdss4.dat`). It will undoubtedly have to be further divided into smaller bands (as in the WDS) as it grows in size. A summary file (`wdss_summ.txt`) is also available.

See the main WDS page <http://ad.usno.navy.mil/wds/wds.html> or mirror <http://www.astro.gsu.edu/wds/> for files.

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The deadline for contributions to Information Circular No. 193 is:

October 15th 2017

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