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Orbital elements of double stars: 15186+2356 and ADS 12746

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INTERNATIONAL ASTRONOMICAL UNION
COMMISSION G1 (BINARY AND MULTIPLE STAR SYSTEMS)
DOUBLE STARS INFORMATION CIRCULAR No. 193 (OCTOBER 2017)

NEW ORBITS

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2017 2018	Author(s)
- 00061+0943	HDS 7 7°2875	49 ^y 4 0 ^o 213	2003.77 60°7	0.515 237°6	183°2 2015.7433	194°6 0 ^o 255 196.8 0.258	RICA
00469+4339	HDS102 4.2913	83.89 0.336	2016.70 113.4	0.783 61.3	51.3 2010.7144	349.3 0.033 263.1 0.060	DOCOBO & CAMPO
918 01072+3839	A 1516 AB 10.7431	33.51 0.123	1998.29 3.3	0.241 208.4	3.1 2014.7554	44.8 0.151 51.8 0.150	DOCOBO & CAMPO
1223 01337-1213	HWE 4 2.5277	142.42 0.571	2065.92 118.6	0.837 318.6	3.1 2014.7554	330.3 0.868 330.0 0.865	DOCOBO & CAMPO
- 01541-7729	JSP 31 1.4395	250.0 0.430	1968.23 112.1	0.50 180.1	25.5 2016.951	51.0 0.320 50.2 0.329	TOKOVININ
1674 02087-1005	HU 16 AB 0.7423	485.0 1.173	1929.62 45.4	0.0 0.0	338.8 2013.737	35.9 0.893 36.8 0.889	TOKOVININ
- 02231+7021	MLR 377AB 1.2715	283.14 3.696	1776.22 94.2	0.982 89.3	106.0 2010.0520	135.8 0.696 135.3 0.697	JOSTIES & MASON
1477 02318+8916	WRH 39 AaAb 12.1663	29.59 0.131	2017.25 129.0	0.608 123.0	197.0 2012.0992	80.5 0.035 25.5 0.056	DOCOBO & CAMPO
- 02361+0653	GKI 1AB 1.7910	201.0 5.300	2005.00 72.5	0.420 36.0	292.8 2010.594	19.9 1.050 32.1 1.080	MASON & ROBERTS
- 02374-5233	TOK 186 Aa,Ab 113.5389	3.171 0.079	2011.523 116.5	0.065 38.0	232.6 2017.682	199.5 0.050 56.0 0.082	TOKOVININ
- 02390-5811	HDS 345 89.5656	4.019 0.150	2017.012 153.2	0.507 180.3	308.4 2017.682	345.1 0.174 308.8 0.226	TOKOVININ

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)
2253 02589+2137	BU 525 0.7129	505. 0.647	1947.6 62.3	0.256 303.8	265.2 2015.8270	275.0 0.543 275.4 0.543	MASON & ROBERTS
2283 03003-1118	A 2611 AB 4.7821	75.28 0.140	1954.11 23.4	0.577 316.5	53.3 2017.682	245.6 0.136 249.6 0.129	TOKOVININ
- 03053-4059	HDS 391 6.7774	53.12 0.258	2036.180 80.0	0.500 239.8	303.7 2016.961	357.5 0.076 11.1 0.066	TOKOVININ
- 03076-0358	HDS 396 9.4804	38.0 0.296	2021.66 140.6	0.550 258.2	46.1 2017.682	240.8 0.217 227.8 0.189	TOKOVININ
2436 03175+6540	STT 52AB 0.2260	1593.1 1.918	3418.5 105.4	0.807 307.4	146.9 2010.0880	53.4 0.506 52.9 0.507	JOSTIES & MASON
2446 03177+3838	STT 53AB 3.1496	114.30 0.710	1931.80 121.7	0.860 70.9	135.1 2014.8199	233.4 0.582 232.1 0.572	MASON & ROBERTS
2612 03350+6002	STF 400AB 1.3478	267.10 1.112	1939.07 68.1	0.697 34.6	82.7 2015.981	268.1 1.606 268.3 1.612	MASON (1) & ROBERTS
- 03463-6630	HDS 477 6.0483	59.5 0.159	2012.96 38.5	0.867 67.7	127.1 2017.682	333.2 0.126 336.6 0.139	TOKOVININ
2811 03513+2621	A1830AB 0.3846	936.05 1.776	1981.42 89.3	0.965 266.2	192.5 2009.7495	193.8 0.473 193.8 0.477	JOSTIES & MASON
- 03556-2613	HDS 495 7.2000	50.0 0.207	1991.68 130.6	0.093 313.5	230.9 2017.682	78.3 0.199 73.4 0.206	TOKOVININ
2923 04002+0818	A 1936 BC 1.6000	225.0 0.425	1978.87 152.4	0.179 51.3	68.9 2016.959	291.7 0.378 290.0 0.382	TOKOVININ
- 04195+3800	HDS 552 12.7150	28.313 0.143	2024.016 110.6	0.585 289.4	122.8 2012.0992	317.6 0.152 314.3 0.150	DOCOBO & CAMPO
- 04397+0952	HDS 601 Aa,Ab 1.7647	204.0 1.302	2028.17 77.1	0.124 133.5	154.1 2016.961	303.1 0.469 305.9 0.503	TOKOVININ

(1): With Hip2 parallax, $\Sigma_{\text{mass}} = 2.93 \pm 0.57$

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)
- 04404+1631	CHR 154 4.2802	84.1 0.516	2006.07 63.6	0.272 73.0	1.3 2015.910	168.7 0.419 171.4 0.442	TOKOVININ
- 04492-3126	HDS 620 5.9774	60.23 0.449	2017.30 180.0	0.31 0.0	66.7 2016.137	58.4 0.311 46.6 0.314	TOKOVININ
- 04559-3052	HDS 637 8.7717	41.04 0.303	2007.65 110.5	0.55 112.3	248.7 2016.961	12.6 0.157 2.6 0.151	TOKOVININ
- 05091-4201	HDS 676 7.8008	46.15 0.175	2019.52 63.6	0.50 252.4	169.4 2017.682	5.8 0.082 25.4 0.057	TOKOVININ
4392 05484+2052	STT 118 AB 1.5548	231.5 0.365	2003.0 91.2	0.834 351.2	137.9 2016.959	319.7 0.135 319.6 0.148	TOKOVININ
5002 06236+1739	A 2517 2.5714	140.0 0.161	2026.33 106.3	0.30 264.4	14.6 2016.959	179.4 0.088 176.9 0.081	TOKOVININ
- 06499-2806	HDS 947 AB 7.1502	50.35 0.193	2015.26 59.3	0.200 53.0	194.0 2016.962	269.7 0.082 289.7 0.082	TOKOVININ
- 07312+0210	TOK 393 56.0567	6.422 0.062	2015.500 150.0	0.171 156.2	37.3 2017.284	86.2 0.065 47.8 0.072	TOKOVININ
7010 08486+0237	A 2551 4.9107	73.31 0.133	1952.63 22.8	0.619 52.3	45.4 2016.9647	117.4 0.109 123.1 0.102	MASON & HARTKOPF
- 08547+1637	TOK 196 Aa,Ab 23.4299	15.365 0.184	2010.088 136.7	0.650 106.2	28.1 2016.965	94.4 0.230 86.2 0.233	TOKOVININ
- 09307-4028	COP 1 10.5560	34.10 0.810	1969.87 57.2	0.431 46.2	289.1 2016.9619	124.5 1.029 127.7 1.015	MASON (2) & HARTKOPF
- 11525-1408	HDS 1676 23.6862	15.20 0.132	2001.15 38.1	0.733 315.5	326.3 2017.372	51.1 0.092 70.5 0.124	TOKOVININ
8552 12270-0332	A 79 AB 1.5571	232.0 0.748	1986.63 100.4	0.962 250.0	113.7 2017.285	97.9 0.509 97.8 0.514	TOKOVININ

(2): With Hip2 parallax, $\Sigma_{\text{mass}} = 3.045 \pm 0.087$

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)
13133+1621	HD 114882 12.7150	25.402 0.087	2015.138 59.2	0.401 207.0	284.5 2017.3426	189.4 0.031 230.7 0.042	DOCOBO et al (*) I
13133+1621	HD 114882 12.7150	25.402 0.087	2015.138 120.8	0.401 207.0	127.9 2017.3426	223.0 0.031 181.7 0.042	DOCOBO et al (*) II
- 13472-0943	KUI 65 1.0141	355.0 0.428	2013.84 153.5	0.906 52.0	141.7 2017.285	345.0 0.093 338.1 0.109	TOKOVININ
- 14277-4113	I 1243 0.8964	401.6 0.434	1998.81 139.9	0.410 7.5	291.2 2016.1406	250.8 0.242 248.7 0.241	MASON & HARTKOPF
9318 14358+0015	BU 941AB 0.5481	656.8 0.784	2008.0 133.8	0.816 54.8	115.3 2017.421	343.4 0.157 338.4 0.170	SCARDIA et al. (**)(n)
9324 14369+4813	A 347 1.3953	258.0 0.562	1930.3 139.6	0.215 92.3	99.8 2014.4420	236.0 0.552 235.0 0.551	DOCOBO & ANDRADE
- 15186+2356	COU 307 1.2000	300.0 0.597	1964.70 117.6	0.760 288.4	59.1 2017.6099	356.1 0.361 355.1 0.363	LING et al (***)
9913 16054-1948	BU 947 AB 0.5669	635.0 0.988	2619.3 66.2	0.325 62.8	96.4 2017.536	212.2 0.310 214.4 0.316	TOKOVININ
10206 16468+0821	A 2784AB 0.8998	400.1 0.407	1895.6 44.0	0.120 276.6	139.7 2017.484	169.1 0.387 169.9 0.386	SCARDIA et al. (**)
- 17005+0635	CHR 59 13.5849	26.50 0.190	2015.40 66.0	0.011 282.0	249.5 2015.3341	218.6 0.123 229.4 0.149	MASON (3) & ROBERTS
- 17247+3802	HSL 1Aa,Ac 2.9532	121.9 0.570	2010.40 97.0	0.720 74.0	236.7 2014.5455	57.3 0.316 56.6 0.347	MASON (4) & ROBERTS
- 17313+1901	COU 499 1.1362	316.83 0.284	2003.65 124.6	0.500 216.5	225.1 2017.433	318.6 0.092 313.4 0.094	TOKOVININ
- 17415-5348	HDS 2502 17.2592	20.86 0.140	2018.10 131.2	0.545 139.4	340.3 2017.681	195.9 0.053 150.0 0.074	TOKOVININ

(3): With Hip2 parallax, $\Sigma_{\text{mass}} = 4.16 \pm 0.86$

(4): With Hip2 parallax, $\Sigma_{\text{mass}} = 1.59 \pm 0.86$

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)
- 17533-3444	BU 1123 0.5323	676.3 0.543	1960.7 38.3	0.704 115.9	38.9 2015.5410	263.5 0.345 264.3 0.348	DOCOBO & LING
10912 17571+0004	STF 2244 0.7581	474.9 1.032	1978.3 83.9	0.562 289.6	97.7 2009.7495	99.9 0.667 100.0 0.670	JOSTIES & MASON
11128 18097+5024	HU 674 0.4656	773.2 1.981	2050.5 101.7	0.796 66.9	203.0 2009.7495	213.6 0.740 213.2 0.737	JOSTIES & MASON
11324 18250-0135	AC 11 1.0588	340.0 0.675	1874.0 93.5	0.400 25.4	175.6 2017.537	354.9 0.907 354.8 0.907	TOKOVININ
- 18323-1439	CHR 73 63.9695	5.628 0.056	2012.269 118.3	0.218 72.8	225.1 2017.373	148.9 0.021 50.6 0.054	TOKOVININ
- 18500-1519	YSC 12AB 184.6817	1.9493 0.673	2000.9490 77.3	0.091 103.8	239.7 2015.7358	63.9 0.639 240.2 0.679	MASON & ROBERTS
- 19301-4904	HDS 2772 4.5000	80.0 0.312	2019.69 66.9	0.700 144.4	171.3 2017.433	264.6 0.044 317.7 0.059	TOKOVININ
12540 19307+2758	MCA 55Aa,Ac 5.2470	68.61 0.558	2015.40 114.7	0.787 264.8	255.3 2008.801	261.3 0.184 252.5 0.252	MASON & ROBERTS
12746 19389+3514	HU 953 0.7722	466.2 0.884	2000.5 37.9	0.762 273.0	50.2 2017.6101	54.3 0.382 56.3 0.395	LING et al (***)
12911 19471-0809	A 108 1.4824	242.85 0.299	1946.34 51.4	0.717 265.0	53.8 2009.6209	107.6 0.315 108.2 0.316	DOCOBO & LING
- 19496-5525	I 658 0.8637	416.8 1.098	1895.4 134.0	0.474 169.8	98.7 2015.5411	132.1 1.225 131.7 1.232	DOCOBO & CAMPO
- 20311-1503	FIN 336 7.1059	50.66 0.168	1949.71 68.3	0.656 81.4	106.4 2017.5367	322.7 0.141 325.6 0.138	MASON (5) & HARTKOPF
14499 20591+0418	STF 2737 AB 3.4615	104.0 0.609	1920.75 92.4	0.692 343.3	105.3 2017.602	281.2 0.186 279.6 0.130	TOKOVININ

(5): With Hip2 parallax, $\Sigma_{\text{mass}} = 2.93 \pm 0.70$

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2017 2018	Author(s)
- 21543+1943	COU 432 BC 5.1471	69.94 0.192	1985.20 108.2	0.063 71.3	191.2 2017.682	341.3 0.112 336.1 0.101	TOKOVININ
- 22400-8315	HDS 3219 27.0677	13.30 0.085	2013.000 27.8	0.440 128.8	41.4 2017.433	332.5 0.105 345.7 0.111	TOKOVININ
- 22474+1749	WSI 93 13.4704	26.73 0.247	2017.37 35.7	0.641 265.3	3.4 2017.682	321.2 0.091 359.7 0.146	TOKOVININ
16278 22485+3106	BU 1146 1.6416	219.3 0.206	1931.0 149.6	0.356 276.7	144.1 2005.7560	69.6 0.235 68.6 0.236	DOCOBO & CAMPO
16365 22552-0459	BU 178 3.3962	106.0 0.394	1944.21 82.2	0.743 2.2	140.8 2017.682	323.5 0.579 323.6 0.568	TOKOVININ
16448 23009+3522	HU 991 0.5698	631.8 1.417	1976.85 44.8	0.829 48.4	124.0 2017.613	302.8 0.947 303.3 0.963	SCARDIA et al. (**)
- 23125-2349	HDS 3306 10.1124	35.6 0.107	2011.19 135.7	0.800 219.2	96.5 2016.959	86.7 0.136 84.2 0.145	TOKOVININ
- 23210+1715	WSI 11 22.6415	15.90 0.114	2016.57 37.5	0.049 202.3	167.8 2017.682	39.5 0.093 67.9 0.088	TOKOVININ
16880 23378+6601	HU 1324 1.3913	258.75 0.354	2133.17 46.7	0.270 298.5	45.9 2008.7650	186.2 0.370 187.0 0.371	DOCOBO & CAMPO
16904 23393+4543	A 643 0.7078	508.6 0.386	1930.3 132.6	0.380 347.8	220.7 2011.9387	125.6 0.250 124.5 0.251	MASON & ROBERTS

(*) DOCOBO, CAMPO & HORCH

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

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

(n): BU 941AB is a binary star, apparently in a slow orbital motion, which was forgotten by the observers since the last catalogued observation goes back to 1993. I observed it with PISCO (Pupil Interferometry Speckle camera and COronograph) at the Calern station of the OCA (Observatoire de la Cte d'Azur - France) on 2 June 2017 and I found the companion in

the fourth quadrant, nearly at the separation-limit of the Epsilon telescope. Since in 1993 the companion was observed in the second quadrant, this means that during the 24 years since that date it rotated around the main star by passing the periastron.

Marco Scardia

NEW LINEAR FITS						
Authors: MASON & HARTKOPF						
ADS α2000δ	Name	X_0 Y_0	X_A Y_A	ρ_0 θ_0	T_0 Last ob.	2017 2018
-	BUP 158	8.676187	1.266454	47.505	1894.947	95°9 167"695
14308-0839	-	46.705910	-0.235259	169.48	2015.375	95.9 168.190

NEW DOUBLE STARS					
Discovered by: Marco Scardia using the speckle camera PISCO attached to the Epsilon telescope of the Calern Observatory					
STAR	Coord. FK5 J2000	Mag.	Epoch	θ (°)	ρ (")
SCA 179	21 04 03.5 +42 25 21.0	11.2 11.4	2017.616	65.5	5.314
SCA 180AC	20 00 08.5 +34 23 01.1	9.0 9.8	2017.649	35.1	0.371
SCA 180BC	20 00 08.5 +34 23 01.1	9.8 9.8	2017.649	186.0	0.143
SCA 181AB-C	20 00 40.7 +32 10 37.7	10.2 13.5	2017.651	91.8	3.631

NEW DOUBLE STARS

Discovered by: Kacper Wierzchos using a CCD camera attached to the 0.2m SCT of the Aravaca Observatory, Spain

STAR	Precise Coord.	UCAC4	Mag.	Epoch	θ ($^{\circ}$)	ρ ($''$)
WRS 3	125736.70+364930.6	635-048863	11.7	2017.512	344	14.8
	125736.37+364944.7	635-048862	12.3			

ANNOUNCEMENTS

WORKS OF F. G. W. STRUVE

The INAF-Osservatorio Astronomico di Brera (Italy) has scannerized the following works of F.G.W. Struve which are present in its library:

1. Stellarum Duplicium et Multiplicium Mensurae Micrometricae....
2. Additamentum in F.G.W. Struve Mensuras Micrometricas....
3. Catalogue de 514 étoiles doubles et multiples decouvertes....

The relevant files are in pdf and can be freely downloaded from the web page <http://www.brera.inaf.it/?page=struve>

In the future, the same operation will be made for the volume of F.G.W. Struve "Catalogus Novus Stellarum Duplicium et Multiplicium..." and for the publications and volumes concerning the measurements of binary stars made by G.V. Schiaparelli and by E. Dembowski.

Marco Scardia

Errata in Information Circular No. 192

In the table on NEW DOUBLE STARS discovered by A. Debackère (pag 4):

- The data of magnitude A component (column 4) should be in the ρ column (8)
- The data of magnitude B component (column 5) should be in the magnitude of A component column (4)
- The data of the ρ column (8) should be in the magnitude of B component column (5)

The deadline for contributions to Information Circular No. 194 is:

February 15th 2018

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