

INTERNATIONAL ASTRONOMICAL UNION COMMISSION 26

(DOUBLE STARS)

INFORMATION CIRCULAR No. 185 (FEBRUARY 2015)

NEW ORBITS

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2015 2016	Author(s)
32 00047+3416	STF 3056 AB 0°6606	545 ^y 0''623	2142.0 99°4	0.670 119°6	136°4 2009.8	141°9 0''709 141.9 0.708	ZIRM
147 00118+2825	BU 255 1.4694	245. 0.661	2067.2 116.0	0.960 265.4	166.1 2008.8	66.3 0.445 65.9 0.442	ZIRM
285 00209+3259	AC 1 0.6857	525. 1.234	1820.1 84.0	0.600 26.8	107.5 2012.1	288.7 1.839 288.8 1.841	ZIRM
363 00271-0753	A 431 AB 6.7214	53.56 0.364	2003.58 109.0	0.644 293.0	25.5 2013.573	329.5 0.172 321.9 0.168	SCARDIA et al. (*)
1081 01198-0031	STF 113 A-BC 0.5538	650. 1.324	1686.0 43.5	0.640 106.7	87.2 2013.9	20.4 1.637 20.6 1.638	ZIRM
- 02366+1227	MCA 7 94.737	3.800 0.077	2010.280 112.7	0.017 3.7	145.0 2010.718	47.8 0.030 322.9 0.078	DOCOBO et al. (**)
- 02434-6643	FIN 333 4.300	83.73 0.509	1998.06 90.0	0.423 269.2	34.1 2013.737	34.1 0.462 34.1 0.457	DOCOBO et al. (**)
2524 03244-1539	A 2909 31.732	11.345 0.172	2013.744 71.3	0.507 283.0	16.2 2013.737 3	23.1 0.129 38.4 0.125	DOCOBO et al. (**)
2117 02471+3533	BU 9AB 0.5844	616. 1.882	1952.0 67.3	0.100 21.5	174.0 2009.1	214.8 0.937 215.7 0.926	ZIRM
2452 03196+6714	HU 1056 0.5970	603. 1.386	2010.2 99.2	0.180 15.4	83.3 2012.8	80.1 1.073 79.9 1.067	ZIRM
2628 03356+3141	BU 533 AB 0.7775	463. 0.992	1776.6 94.8	0.110 15.3	42.7 2012.2	221.0 1.037 221.0 1.033	ZIRM

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2015 2016	Author(s)
- 03520+0632	KU I15 AB 0.4133	871. 0.925	1909.3 96.1	0.660 73.7	28.6 2012.1	206.6 0.790 206.6 0.793	ZIRM
3430 04460-0659	BU 186 0.4934	729.6 1.53	1999.78 55.6	0.806 150.2	178.1 2012.8986	34.3 0.366 37.1 0.369	RICA
3072 04139+0916	BU 547 AB 0.7516	479. 1.053	1816.6 128.6	0.910 263.0	52.9 2009.1	339.5 1.263 339.4 1.263	ZIRM
4390 05480+0627	STF 795 0.3158	1140. 1.237	2187.6 61.0	0.580 340.7	19.6 2012.4	219.7 1.026 219.9 1.020	ZIRM
6263 07401+0514	STF 1126 AB 0.4787	752. 1.054	2254.0 55.4	0.330 208.7	124.4 2012.2	176.4 0.840 176.8 0.836	ZIRM
7039 08507+1800	A 2473 3.175	113.4 0.979	2018.01 80.2	0.972 89.0	115.0 2009.265	94.6 0.195 98.2 0.171	DOCOBO et al. (**)
- 09128-6055	HDO 207 0.900	400.0 0.548	1960.7 76.4	0.538 149.0	43.7 2013.238	77.2 0.134 74.2 0.132	DOCOBO et al. (**)
8332 11532-1540	A 2579 1.524	236.3 0.321	1897.68 147.9	0.287 160.6	17.8 2010.266	35.0 0.406 34.3 0.407	DOCOBO et al. (**)
8405 12042+2407	A 682 0.9474	380.0 0.389	1999.48 116.5	0.270 276.5	143.5 2013.033	178.2 0.191 176.6 0.196	RICA
8708 12564-0057	STT 256 0.5950	605. 1.549	1749.7 75.0	0.900 108.1	143.6 2013.3	100.4 1.061 100.5 1.064	ZIRM
8801 13099-0532	MCA 38 Aa.Ab 0.5180	695. 1.243	1935.3 74.7	0.720 124.8	126.8 2009.3	351.7 0.406 352.6 0.404	ZIRM
8988 13400+3759	HU 897 0.6780	531. 0.476	2076.2 33.9	0.360 41.4	88.0 2008.3	55.1 0.365 56.0 0.364	ZIRM
- 13535-3540	HWE 28 AB 0.9652	373.0 1.519	1958.57 74.2	0.775 90.7	112.3 2011.0401	314.6 1.008 315.0 1.009	DOCOBO & LING
9254 14247-1140	STF 1837 0.1946	1850. 2.712	2083.5 115.7	0.700 239.0	82.7 2006.3	271.5 1.159 271.2 1.155	ZIRM

NEW ORBITS (continuation)

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2015 2016	Author(s)
9312 14336+3535	STF 1858A B 0.2057	1750. 4.796	1758.9 85.6	0.900 259.3	30.7 2011.5	37.9 3.029 37.9 3.030	ZIRM
9395 14492-1050	HU 141 2.0702	173.9 0.374	1949.33 57.4	0.890 114.8	6.9 2008.5	309.6 0.411 310.0 0.414	ZIRM
9396 14493-1409	BU 106 AB 0.5863	614. 1.587	1655.0 52.9	0.650 116.5	46.5 2008.1	6.1 1.946 6.3 1.948	ZIRM
- 15185-4753	HJ 4753 AB 0.4663	772. 1.657	2048.0 114.6	0.430 80.9	137.4 2010.3	117.9 0.824 117.2 0.811	ZIRM
9600 15210+2104	HU 146 0.5742	627. 0.839	2174.7 102.8	0.300 84.1	113.3 2010.4	123.7 0.717 123.5 0.719	ZIRM
9628 15246+5413	HU 149 0.4675	770. 0.776	1979.4 96.8	0.170 156.0	90.7 2010.4	270.7 0.652 270.7 0.652	ZIRM
9647 15277+0606	STF 1944 0.3495	1030. 1.131	2089.3 126.6	0.500 294.8	142.6 2010.5	295.2 0.633 294.6 0.626	ZIRM
9834 15550-1923	HU 1274 0.9972	361. 0.576	1974.3 101.7	0.000 0.0	124.4 2009.3	114.5 0.444 114.2 0.438	ZIRM
9880 16009+1316	STT 303 AB 0.2466	1460. 2.214	1475.0 72.9	0.000 0.0	11.0 2012.5	173.6 1.587 173.8 1.593	ZIRM
10659 17366+0723	A 1156 1.8441	195.22 0.281	2000.00 95.5	0.260 156.8	168.3 2009.2659	345.8 0.204 345.5 0.201	DOCOBO & LING
- 17375+2419	CHR 63 17.216	20.911 0.096	2013.189 114.8	0.027 97.9	62.9 2008.467	268.9 0.068 257.2 0.083	DOCOBO et al. (**)
- 17375+2419	CHR63 34.549	10.420 0.127	2005.929 100.6	0.753 259.8	72.4 2008.467	269.4 0.068 253.8 0.053	DOCOBO et al. (**)
10728 17403+6341	STF 2218 0.1690	2130. 3.575	2108.0 133.5	0.790 234.1	85.9 2013.6	309.7 1.446 309.2 1.439	ZIRM
10796 17472+1502	HU 1288 0.4706	765. 0.519	2005.0 64.5	0.160 355.1	159.5 2010.6	160.2 0.436 160.5 0.436	ZIRM

NEW ORBITS (continuation)

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2015 2016	Author(s)
11098 18086+1838	HU 314 0.3349	1075. 0.602	1885.7 123.1	0.200 31.7	170.0 2010.6	72.9 0.290 72.1 0.291	ZIRM
12447 19266+2719	STF 2525 AB 0.4077	882.9 1.870	1887.72 150.7	0.958 62.5	155.3 2014.740	289.5 2.163 289.5 2.172	SCARDIA et al. (*)
12623 19346+1808	STT 375 0.5279	682. 0.521	2271.2 24.0	0.200 159.4	177.7 2011.7	187.3 0.602 187.7 0.601	ZIRM
13196 19585+3317	STF 2606 AB 0.7912	455. 1.081	1745.7 82.4	0.690 240.5	127.4 2012.8	146.4 0.675 146.6 0.669	ZIRM
14880 21209+0307	BU 838 0.2813	1280. 2.342	2050.0 40.8	0.200 148.7	12.9 2007.7	154.5 1.661 154.9 1.664	ZIRM
16011 22305+6137	HU 981 0.3854	934. 0.612	1904.6 102.0	0.650 116.9	53.0 2008.8	214.3 0.295 214.0 0.294	ZIRM
- 22408-0333	KUI 114 6.597	54.57 0.367	1969.38 87.5	0.005 12.9	128.9 2012.705	126.3 0.252 126.8 0.280	DOCOBO et al. (**)
16317 22514+6142	STF 2950 AB 0.4478	804. 1.854	2083.5 128.3	0.520 298.1	116.2 2011.9	274.8 1.182 274.2 1.169	ZIRM

(*) SCARDIA, PRIEUR, PANSECCHI, ARGYLE & ZANUTTA

(**) DOCOBO, TAMAZIAN, CAMPO, MALKOV & CHULKOV

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NEW COMBINED SPECTROSCOPIC/ASTROMETRIC ORBITS

In the article “Are the orbital poles of binary stars in the solar neighbourhood anisotropically distributed?” (2015 *A&A* 574, A6), the authors reported the fact that, of the 95 systems that are closer than 18 pc from the Sun and have an orbit in the 6th Catalogue of Orbits of Visual Binaries, the pole ambiguity could be resolved for 51 systems using radial velocity measurements. Also, it was possible to correct the erroneous nodes and determine new combined spectroscopic/astrometric orbits for the following systems: WDS 01083+5455 Aa,Ab; 01418+4237 AB; 02278+0426 AB (SB2); 09006+4147 AB (SB2); 16413+3136 AB; 17121+4540 AB; 18070+3034 AB.

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NOTE

ON THE DESIGNATION OF MULTIPLE STARS

On the designation of multiple stars

Back in 2003, the IAU GA XXV recognized the need of a unified and computer-friendly system for designating components of binary and multiple stars (<http://adsabs.harvard.edu/abs/2005HiA...13.1011M>). The naming system adopted in the WDS is not satisfactory because the discoverer codes are not recognized or used by the majority of astronomers. Sometimes, but not always, component identifiers are appended to the discoverer codes. Both codes and component identifiers in the WDS change with time. As a result, a given binary has a changing name in the WDS and in the orbit catalogs and cannot be associated with a unique string of characters for automated searches. The WDS nomenclature is also poorly suited for hierarchical systems.

In my work, I follow the rule formulated by Hartkopf & Mason (<http://adsabs.harvard.edu/abs/2005HiA...13..981H>): “A comma will be used as the delimiter between components in a system, with the full component identifier before and after the comma (e.g. Aa,Ab).” There must be no exceptions to this rule when dealing with triples. When needed, hierarchy is coded by adding the name of the parent component in a separate field or with another comma (see e.g. <http://www.ctio.noao.edu/~atokovin/stars/index.php>). For example, in a triple system consisting of a close pair A,B and a wider component C, the outer pair is named AB,C,* (where * means no parent) and the inner pair as A,B,AB. Here AB refers to the center of mass of the inner binary - a composite “component” with such properties as position, mass, and flux, while A,B refers to the orbit of the inner pair with its period, eccentricity, mass ratio, etc. Obviously, the component AB and the system A,B are different entities, not to be confused. Each component must be designated by a unique, fixed sequence of letters and numbers (a string). A system is then designated by its two components joined with comma. Strict adherence to this rule will allow automated searches in the double-star catalogs, easy designation of newly discovered components, and consistent description of hierarchy.

Once the fixed component designations are adopted (changing designations are not acceptable anyway), each system will be uniquely defined by its two components, so the discoverer codes become redundant. They are the old, complementary way to name visual binaries. The historical reasons behind these codes (individual observers) are no longer valid. Modern authors do not assign their codes to the new systems, while such codes invented later by the WDS are arbitrary and essentially meaningless. Discoverer codes are not used for eclipsing and spectroscopic binaries or exoplanets.

The messy designations in the current WDS arise from the old restrictions on the number of characters in the computer records and from the desire to reflect the hierarchy in the component’s names themselves. As the knowledge of hierarchy changes, so do the component letters in the WDS. To serve as component designations, these letters must be fixed. In contrast, the hierarchy can be described flexibly by parent components and can be changed as needed without affecting the component’s names.

To implement the IAU recommendation, I propose the following:

1. Freeze the component designations existing currently in the WDS. Explicitly assign A and B to those that are missing.

2. Enforce the use of comma in the system designation.
3. Separate the component-based system designations such as A,B from the discoverer codes, never concatenate them in one string.
4. Discontinue assigning discoverer codes to new systems.

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