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Orbital elements of double stars: ADS 13169

Marco Scardia, Jean-Louis Prieur, Luigi Pansecchi, Robert W. Argyle, Eric Aristidi, Abe Liu, Philippe Bendjoya, Cécile Combier-Dimur, Jean-Pierre Rivet, Olga Suarez, et al.

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INTERNATIONAL ASTRONOMICAL UNION

COMMISSION G1 (BINARY AND MULTIPLE STAR SYSTEMS)

DOUBLE STARS INFORMATION CIRCULAR No. 190 (OCTOBER 2016)

NEW ORBITS

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2016 2017	Author(s)
- 00463-0634	HDS 101 11°7953	30ʸ52 0″094	2010.24 21°6	0.716 144°5	53°8 2015.9128	346°3 0″107 351.7 0.117	CVETKOVIC
- 01104-6727	GKI 3 314.4929	1.1447 0.125	2013.408 129.1	0.157 33.0	88.0 2015.9130	291.5 0.117 345.4 0.073	MILES & MASON
2323 03035-1059	BU 1174 1.0405	346. 1.221	2039.8 120.8	0.797 249.4	7.6 2015.0311	225.4 0.584 224.0 0.576	LING
- 04025+0638	HDS 510 8.5713	42.00 0.175	2009.43 58.4	0.593 185.6	87.8 2015.7437	57.7 0.136 62.9 0.157	CVETKOVIC
3041 04107-0452	A 2081 17.4622	20.616 0.161	2014.035 66.4	0.843 248.7	331.8 2015.7437	345.7 0.125 350.9 0.147	DOCOBO et al. (*)
- 07549-2920	KUI 32 11.9601	30.1 0.81	1996.3 137.	0.683 255.	128. 2015.0314	38.0 0.934 33.0 0.902	MILES & MASON
- 12290+0826	WSI 113 33.1187	10.87 0.299	2008.24 110.6	0.256 78.7	183.6 2015.1687	206.3 0.232 191.1 0.275	MILES & MASON
- 14540+2330	REU 2 11.6279	30.96 0.666	1994.4 123.	0.73 22.	292. 2014.5608	88.3 0.872 85.5 0.807	MILES & MASON
- 17077+0722	YSC 62 26.1059	13.79 0.296	2006.46 115.1	0.514 16.5	240.2 2015.3358	37.7 0.308 25.8 0.225	MILES & MASON
- 17119-0151	LPM 629 10.3627	34.74 0.708	1989.33 17.	0.194 215.	159. 2013.4738	269.3 0.690 279.8 0.670	MILES & MASON
11010 18025+4414	BU1127 Aa,B 1.2790	281.47 0.750	2070.25 146.4	0.298 135.3	73.2 2015.4880	46.3 0.705 45.1 0.697	CVETKOVIC

NEW ORBITS (continuation)

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2016 2017	Author(s)
- 19069+4137	COU 2197 7.7270	46.59 0.203	2024.45 146.7	0.167 188.8	23.1 2008.563	275.4 0.164 265.7 0.164	DOCOBO & LING
- 19449-2338	MTG 4 11.5385	31.2 0.45	2021.7 140.	0.92 332.	150. 2015.5410	340.2 0.609 338.0 0.551	MILES & MASON
13169 19580 +0456	A 606 1.6304	220.8 0.410	1924.46 12.5	0.379 251.7	107.0 2016.731	163.0 0.545 163.8 0.546	SCARDIA et al. (*)
13728 20203+3942	A 1427 AB 4.3578	82.61 0.250	2032.75 56.1	0.879 238.3	70.4 2008.8750	135.9 0.209 137.7 0.201	DOCOBO & CAMPO
14748 21125+2821	HO 152 1.7455	206.24 0.374	2015.41 69.8	0.480 41.4	131.6 2010.6345	150.4 0.146 154.2 0.135	DOCOBO & LING
- 21313-0947	BLA 9 185.9600	1.9359 0.155	1996.80 54.	0.48 135.	170. 2007.5992	211.9 0.080 130.4 0.170	MILES & MASON
15267 21439+2751	HO 166 AB 4.5403	79.29 0.286	2013.41 146.2	0.279 154.7	87.1 2009.7286	270.3 0.209 263.6 0.212	DOCOBO & CAMPO
- 22100+2308	COU 136 1.2649	284.6 0.620	1969.6 110.6	0.321 304.2	35.8 2011.8710	19.5 0.460 18.8 0.456	DOCOBO & CAMPO

(*) DOCOBO,CAMPO & ABUSHATTAL

(**) SCARDIA, PRIEUR, PANSECCHI, ARGYLE, ARISTIDI, ABE, BENDOYA, COMBIER-DIMUR, RIVET, SUAREZ & VERNET. The orbit has been computed following the quadrant determination resulting from the observations of Hipparcos (1991.25) and PISCO (1998.679, 2016.720 and 2016.731).

NEW LINEAR FITS

Authors: MILES, S. K. N. & MASON, B. D.

ADS α**2000**δ	**Name** **-**	X_0 Y_0	X_A Y_A	ρ_0 θ_0	T_0 **Last ob.**	**2016** **2017**
-	BEU 5	0.226852	0.046481	0.479	1994.6250	95.2 1.226
04073-2429	-	-0.422011	0.024986	28.260	2014.8570	96.2 1.274
-	WSI 121Aa,Ab	0.105101	-0.023136	0.413	2022.9100	143.4 .444
05101-2341	-	0.398943	0.006095	165.240	2015.9080	146.3 .436
-	WSI 123	0.046165	-0.030057	0.694	2016.5040	174.9 .694
06300-1924	-	0.692598	0.002003	176.190	2015.9130	177.4 .694
-	REP 21	-1.104478	0.013160	1.402	1982.2590	204.8 1.576
11105-1600	-	0.862668	0.016848	232.010	2015.0290	204.1 1.586
-	WSI 114	0.476576	-0.020012	0.503	2010.0600	34.8 .626
13422-1600	-	-0.160252	-0.059515	71.410	2014.1860	30.5 .665
-	WTR 1	1.825265	0.047792	2.729	2012.0800	132.7 2.740
21492-4133	-	2.028050	-0.043013	138.010	2014.7680	131.4 2.747

NEW DOUBLE STARS

Discovered by: Rene Gili using the speckle camera PISCO 2 attached to the 76 cm refractor of the Cote d'Azur Observatory

All measurement was done by Speckle Interferometry and also for some of them using Lucky Imaging noted as LY in column 8 (M).

STAR	Coord. 2000	UCAC4	Mag.		Epoch	θ (°)	ρ (″)	M	Notes
GII 37 Ba,Bb	090610.195+331345.40	617-045162	13.4	13.6	2011.178	94.2	0.297		COU 1560
GII 38 Ba,Bb	085336.808+120930.43	511-047331	13.6	13.7	2011.268	354.9	0.255	LY	HEI 480
GII 39 AC	085639.338+012949.74	458-045842	11.3	13.7	2011.268	234.6	1.837	LY	HEI 745
GII 40 AC	153707.051+264536.53	584-051501	9.5	14.1	2011.468	241.9	2.085	LY	HDS 2199
GII 41	161936.367+743418.14	823-019496	10.7	12.7:	2011.515	26.4	2.728	LY	
GII 42	160046.944+113857.16	509-058824	10.7	12.8	2011.526	215.6	1.661	LY	
GII 43 Aa,Ab	175311.878+324121.86	614-057503	11.1	13.2	2011.575	25.5	0.178		COU 998
GII 44	200101.475-023343.79	438-109847	12.3	13.3	2011.756	10.3	1.418		
GII 45	072213.311+083722.99	494-042145	11.2	15.6	2012.156	265.2	8.564	LY	
GII 46 Ba,Bb	185816.783+485716.29	695-063460	13.9	15.1	2012.585	83.7	0.427	LY	KOI 258
GII 47	192400.923+243636.95	574-083740	10.5	14.8	2012.604	56.9	3.282		
GII 48	183541.914+345223.22	625-060283	11.0	12.5	2012.628	312.7	0.310	LY	
GII 49	200328.698+221438.20	562-104250	12.2	13.4	2012.634	331.1	4.152	LY	
GII 50	192640.720+224127.72	564-085611	12.2	12.2	2012.680	9.5	0.402		
GII 51	202333.773+385340.77	645-093882	11.0	14.2	2012.724	355.6	3.218	LY	
GII 52 Aa,Ab	203555.194+361510.29	632-100700	12.5	12.5	2012.724	220.0	0.340	LY	TDT 2405
GII 52 AC	203555.194+361510.29		11.7	16.9	2012.724	344.2	3.860	LY	
GII 53	204424.484+361634.84	632-103136	10.1	10.3	2012.727	358.0	0.256		
GII 54	210403.862+422521.85	663-094311	12.7	12.9	2012.754	246.0	5.308	LY	
GII 55	223559.292+451504.07	677-119754	13.1	14.8	2012.866	311.1	2.532		
GII 56	055628.901+200210.92	551-020653	11.0	13.6	2013.104	41.1	8.268		
GII 57	084446.531+194150.95	549-045693	10.5	12.3	2013.156	286.5	5.296	LY	
GII 58 AC	110613.364+101829.65	502-053833	9.6	14.0	2013.285	344.1	1.810		TDS 7663
GII 59	103516.325+714003.63	809-019649	11.9	12.5	2013.296	154.1	6.48	LY	
GII 60 AC	132734.449+211626.63	557-051608	9.8	11.7	2013.337	127.3	2.882		TOK 46
GII 61 AC	145612.879+174453.51	539-054693	11.8	16.3	2013.427	194.7	1.867:	LY	HDS 2108
GII 62	184141.616+074008.86	489-089366	13.1	13.2	2013.584	245.8	0.891		
GII 63 Aa,Ab	190343.863+113342.91	508-100623	11.4	13.9	2013.614	316.0	0.450		HEI 567
GII 63 AC	190343.863+113342.91		11.4	15.9	2013.614	297.0	5.260	LY	
GII 64	193439.528+003540.33	453-101731	12.4	13.4	2013.608	268.4	1.036		
GII 65	184137.950-052439.15	423-089025	10.8	13.1	2013.611	357.2	2.003		
GII 66	183451.889+055614.07	480-085032	10.3	13.6	2013.625	133.2	3.136	LY	
GII 67	190121.545-005536.63	446-094335	12.0	14.4	2013.625	187.6	5.255	LY	
GII 68	182726.310+062410.78	483-084507	10.9	10.9	2013.641	26.9	2.338		

NEW DOUBLE STARS

Discovered by: Rene Gili using the speckle camera PISCO 2 attached to the 76 cm refractor of the Cote d'Azur Observatory
(continuation)

STAR	Coord. 2000	UCAC4	Mag.		Epoch	θ (°)	ρ (″)	M	Notes
GII 69	203555.194+361510.29	632-100700	12.9	12.9	2013.663	219.1	0.354		
GII 70	202433.192+240233.16	571-107543	11.8	13.3	2013.732	134.6	1.538		
GII 71 Aa,Ab	230315.802+112902.43	508-150502	11.7	12.5	2013.816	217.7	0.189	LY	ROE 132
GII 72 AC	022657.654+195150.24	550-004671	9.9	13.3	2013.833	95.2	1.225	LY	A 2328
GII 73	013736.616+280455.09	591-004070	14.2	14.4	2013.940	281.5	0.832		
GII 74	003059.802+284332.05	594-001418	13.3	13.5	2013.940	53.2	1.341		
GII 75	000006.818+361658.84	632-000005	10.9	11.8	2013.942	219.5	1.030		
GII 76 AC	051137.420+113129.41	508-010810	11.6	13.5	2014.148	279.5	3.132		HEI 459
GII 77	065617.172+103034.55	503-034903	13.7	13.7	2014.148	338.9	3.173		
GII 78	063449.030+260746.25	581-030283	14.1	14.3	2014.181	267.7	1.818		
GII 79 Ba,Bb	085334.458+120935.26	511-047329	10.3	12.9	2014.181	353.2	0.221		HEI 480
GII 80 Ba,Bb	095054.191+201525.10	552-046479	11.7	11.9	2014.197	51.8	0.225		COU 49
GII 81 AC	080014.852+155631.94	530-045410	10.2	13.3	2014.200	36.3	0.216	LY	A 2885
GII 82 Aa,Ab	070314.901+345654.72	625-037553	11.6	11.6	2014.200	357.8	0.310	LY	COU 1739
GII 83 AC	113219.828+252635.37	578-048532	10.4	12:	2014.247	173.0	1.030		TDS 7912 (1)
GII 84 AC	153707.051+264536.53	584-051501	9.4	12.0	2014.403	242.2	2.075	LY	HDS 2199
GII 85 AC	145612.879+174453.51	539-054693	11.8	14:	2014.403	194.0	1.82		HDS 2108(1)
GII 86 Aa,Ab	202750.973+344710.43	624-095840	10.2	14:	2014.600	113.2	0.420	LY	COU 2131 (1)
GII 87 AC	215302.237+482542.41	693-104672	11.7	14.3	2014.830	31.2	6.25	LY	COU 2319
GII 88 AC	221402.552+462232.17	682-119260	12.3	15:	2014.833	113.6	5.196	LY	COU 2238
GII 89 Aa,Ab	225652.547+393418.24	648-117226	9.7	11.7	2014.849	259.9	0.241		COU 1841
GII 90 Ba,Bb	031921.340+430431.94	666-016385	10.9	11.5	2015.016	101.4	0.467	LY	ES 1514
GII 91	013616.918+504304.90	704-011307	10.7	10.7	2015.016	206.2	0.332		
GII 92 Aa,Ab	070314.901+345654.72	625-037553	11.6	11.6	2015.115	169.4	0.359		COU 1739
GII 93	070505.751+151901.20	527-037435	10.1	10.5	2015.137	133.7	0.274:		HEI 49 (2)
GII 94 AC	115254.347+433603.72	669-056186	10.6	14:	2015.268	294.1	4.377	LY	A 1776
GII 95 Aa,Ab	113641.284+212813.65	558-051221	9.9	10.2	2015.301	120.1	0.294	LY	STF 1558
GII 96 Aa,Ab	141107.548+362747.24	633-050389	10.8	13:	2015.375	197.6	0.328	LY	HU 1264
GII 97 Ba,Bb	160051.622+191829.22	547-056001	12.4	12.5	2015.433	50.6	0.153	LY	A 2081
GII 98	203555.194+361510.29	632-100700	12.0	12.0	2015.600	217.1	0.360		
GII 99	204024.634+434502.70	669-087358	10.9	13.5	2015.638	220.3	3.604		

(1) Strong difference of magnitude
(2) Aa or Bb?

NEW DOUBLE STARS

Discovered by: Rene Gili using the speckle camera PISCO 2 attached to the 76 cm refractor of the Cote d'Azur Observatory
(continuation)

STAR	Coord. 2000	UCAC4	Mag.		Epoch	θ (°)	ρ (″)	M	Notes
GII100	190229.629+243153.76	573-077516	14.5	15.0	2015.663	255.4	0.857		
GII101	203232.256+464355.40	684-080538	12.0	13.8	2015.685	288.7	0.403	LY	
GII102 Aa,Ab	213026.383+370145.18	636-113824	10.1	12.2	2015.775	305.5	0.415	LY	SEI 1521
GII103 Ba,Bb	223010.755+405921.60	655-111468	11.8	13.9	2015.873	204.8	0.391	LY	ES 1696
GII104	215607.357+284627.05	594-129827	10.3	14.3	2015.882	104.8	1.897	LY	
GII105 Ba,Bb	002245.419+461426.14	682-002339	11.1	11.2	2015.882	95.6	0.151		ES 1199
GII106	013801.495+275510.88	590-004009	12.9	13.6	2015.936	230.3	2.424		
GII107	233733.165+260416.84	581-132388	12.8	12.9	2015.969	239.2	0.496		
GII108	004812.255+105509.15	505-001243	12.9	13.6	2015.969	33.6	2.627		
GII109 Ba,Bb	003924.785+405027.58	655-002621	15.5	15.6	2015.997	11.7	0.305	LY	ES 1604

NEW DOUBLE STARS

Discovered by A. Debackère using:

- GEM : Gemini Telesope T0.51m, Winer Observatory, Sonoita, Arizona, USA, Iowa Robotic Telescope, University of Iowa
- FTN : Faulkes Telescope North T2m, Haleakala, Hawaii, LCOGT
- FTS : Faulkes Telescope South T2m, Siding Spring, Australia, LCOGT
- K91 : T1m, Sutherland, South Africa, LCOGT
- Q64 : T1m, Siding Spring, Australia, LCOGT
- V37 : T1m, McDonald Observatory, Fort Davis, Texas, USA, LCOGT
- W85 : T1m, Cerro Tolo, Chile, LCOGT

STAR	Precise Coord	UCAC4 USNO-B1.0	Mag.		Epoch	θ (°)	ρ (″)	Obs
DBR 89 (1)	041040.89+242406.3	573-010529	12.5	14.6	2016.023	33.6	4.34	1FTN
DBR 90	062204.61+264458.1	584-028320	14.5	16.4	2016.006	109.1	4.43	1GEM,2FTN
DBR 91	062201.07+264429.1	584-028300	15.1	18.6	2016.006	273.9	4.63	1GEM
DBR 92	062233.74+263550.5	583-028300	15.5	16.6	2016.062	18.5	3.40	2GEM
DBR 93	062238.69+264642.4	584-028468	12.8	14.6	2016.006	301.1	3.00	1GEM
DBR 94	062733.21+372023.1	637-035090	15.8	17.9	2016.056	355.7	4.63	2GEM
DBR 95	062726.79+370844.5	636-035660	16	16.3	2016.056	187.0	3.78	2GEM
DBR 96 AB	062748.50+370937.8	636-035707	15.3	15.7	2016.029	312.2	4.07	1GEM,3FTN
DBR 96 BC	062748.25+370940.3	636-035706	15.7	17.9	2016.029	55.1	2.59	1GEM,3FTN
DBR 97	062758.68+371034.0	636-035722	15.7	16.8	2016.029	144.5	3.84	1GEM,3FTN
DBR 98	062805.71+371630.0	637-035155	15.8	17.2	2016.029	43.4	4.97	2GEM,2FTN
DBR 99	062758.68+371523.3	637-035144	16.8	18.0	2016.056	195.3	1.87	2FTN
DBR 100	062814.61+371111.2	636-035750	15.3	15.6	2016.056	137.0	1.48	2FTN
DBR 101 AB	062817.39+371532.1	1272-0166521	17.0	18.5	2016.056	15.9	4.31	1FTN
DBR 101 AC	062817.39+371532.1	1272-0166521	17.0	18.6	2016.056	135.1	2.95	1FTN
DBR 102	062733.07+370918.4	636-035676	13.8	17.9	2016.056	49.3	3.03	1FTN
DBR 103	062708.11+370732.4	636-035596	15.7	18.4	2016.118	349.1	4.95	1GEM
DBR 104	062658.35+371213.5	637-035006	16.2	18.5	2016.118	114.7	4.03	1GEM
DBR 105	062702.53+372126.3	637-035018	14.1	16.3	2016.118	267.2	6.03	1GEM
DBR 106	062709.17+372120.5	637-035035	13.6	17.3	2016.118	144.8	4.13	1GEM
DBR 107	062717.78+371015.2	636-035629	16.9	17.9	2016.118	312.8	4.15	1GEM
DBR 108	062715.17+371246.1	637-035046	17.0	17.7	2016.118	24.3	3.98	1GEM
DBR 109	062728.92+372227.2	637-035083	17.2	18.3	2016.118	288.2	5.05	1GEM
DBR 110	062738.88+372301.4	637-035107	18.0	18.0	2016.118	40.5	2.94	1GEM
DBR 111	062738.15+372250.0	637-035105	17.1	19.0	2016.118	134.6	3.58	1GEM

(1) DBR 89 = EPIC211089792 = UCAC4 573-010529. Double star with planets in orbit.
`http://iopscience.iop.org/article/10.3847/0004-637X/824/1/55/meta`

NEW DOUBLE STARS

Discovered by: A. Debackère using Gemini Telescope, Winer Observatory University of Iowa and with LCOGT global telescope network
(continuation)

STAR	Precise Coord	UCAC4 USNO-B1.0	Mag.		Epoch	θ (°)	ρ (″)	Obs
DBR 112	062810.72+372206.6	1273-0165802	17.7	19.5	2016.118	57.7	3.64	1GEM
DBR 113 AB	062817.37+371532.1	1272-0166522	17.2	18.7	2016.118	138.1	3.13	1GEM
DBR 113 AC	062817.37+371532.1	1272-0166522	17.2	19.1	2016.118	12.0	4.41	1GEM
DBR 114	062828.61+372052.0	637-035196	13.3	18.1	2016.118	282.8	4.02	1GEM
DBR 115	062830.30+371812.2	1273-0165950	17.4	18.3	2016.118	279.2	4.86	1GEM
DBR 116	062838.65+370824.8	636-035808	16.0	18.0	2016.118	61.0	4.16	1GEM
DBR 117	062857.37+371643.2	637-035249	16.1	16.2	2016.118	123.7	2.15	1GEM
DBR 118	062855.19+372223.5	637-035245	15.9	16.0	2016.118	21.4	4.69	1GEM
DBR 119 AD (2)	062844.84+372250.8	637-035224	9.8	17.3	2016.118	104.5	8.00	1GEM
DBR 120	074409.96-280725.5	310-030516	13.8	15.6	2016.030	229.3	2.73	1FTS,1FTN
DBR 121	074411.98-280646.3	310-030531	14.1	14.7	2016.030	281.2	5.16	1FTS,1FTN
DBR 122	074410.83-280444.6	0619-0158381	18.5	18.6	2016.036	295.5	2.91	1FTN
DBR 123	074412.61-280448.6	310-030535	12.4	15.8	2016.036	98.7	2.88	1FTN
DBR 124	074409.62-280255.8	310-030514	15.1	17.8	2016.036	2.7	4.83	1FTN
DBR 125	074409.28-275921.2	311-029667	15.7	17.4	2016.030	60.6	3.20	1FTS,1FTN
DBR 126 AB	074412.89-280741.1	0618-0148304	18.2	18.3	2016.036	288.0	4.10	1FTN
DBR 126 AC	074412.89-280741.1	0618-0148304	18.2	20.3	2016.036	256.6	3.01	1FTN
DBR 127	074415.22-280628.4	310-030551	16.7	18.7	2016.036	263.7	4.96	1FTN
DBR 128	074417.41-280723.9	0618-0148385	17.1	18.2	2016.036	347.5	3.75	1FTN
DBR 129	074418.76-280423.0	310-030562	15.6	16.2	2016.030	64.4	3.48	1FTS,1FTN
DBR 130	074415.00-280345.7	0619-0158474	17.5	18.9	2016.036	132.9	3.72	1FTN
DBR 131	074419.24-280324.2	310-030569	16.9	18.8	2016.036	119.8	4.48	1FTN
DBR 132	074420.10-280321.0	310-030570	15.8	19.5	2016.036	125.2	3.79	1FTN
DBR 133	074421.72-280644.5	0618-0148459	17.9	20.1	2016.036	46.2	1.96	1FTN
DBR 134	074423.78-280529.6	310-030594	13.7	14.6	2016.030	356.2	1.64	1FTS,1FTN
DBR 135	074424.67-280412.9	310-030691	15.2	15.6	2016.030	12.6	4.92	1FTS,1FTN
DBR 136	074422.85-280120.2	310-030588	16.8	20.3	2016.036	55.3	2.23	1FTN
DBR 137	074423.76-275845.3	311-029743	15.4	18.6	2016.036	241.7	1.94	1FTN
DBR 138	074427.89-280723.4	310-030610	14.6	18.5	2016.036	311.0	5.04	1FTN
DBR 139	074429.52-280540.9	310-030619	14.8	17.7	2016.036	1.1	3.48	1FTN

(2) The first component of the triple star STF 906 has a companion not indexed in the WDS, is called DBR 119 AD.

NEW DOUBLE STARS

Discovered by: A. Debackère using Gemini Telescope, Winer Observatory University of Iowa and with LCOGT global telescope network.
(continuation)

STAR	Precise Coord	UCAC4 USNO-B1.0	Mag.		Epoch	θ (°)	ρ (″)	Obs
DBR 140 A (3)	074429.62-280316.3	310-030620	9.3		2016.036	112.3	6.87	1FTN
D	074430.11-280318.9	non identified	17.4					
DBR 140 E (3)	074428.89-280323.3	*NOMAND1 10619-0161372*	17.5		2016.036	39.8	3.36	1FTN
F	074429.06-280320.8	non identified	18.4					
DBR 141	074427.35-280027.0	310-030608	17.1	17.2	2016.036	129.7	1.28	1FTN
DBR 142	074428.46-280031.6	0619-0158744	17.6	17.8	2016.036	146.2	4.46	1FTN
DBR 143	074429.03-280028.3	0619-0158753	17.1	18.5	2016.036	11.5	3.18	1FTN
DBR 144	074427.58-275859.6	311-029760	16.1	17.5	2016.036	58.6	2.82	1FTN
DBR 145	074432.58-275842.7	311-029789	16.6	17.4	2016.036	74.5	3.56	1FTN
DBR 146	074442.51-280722.1	310-030671	15.6	19.1	2016.036	31.2	3.44	1FTN
DBR 147	074446.42-280515.6	310-030691	10.9	15.2	2016.030	46.9	3.47	1FTS,1FTN
DBR 148	074448.27-280512.9	310-030698	15.2	16.6	2016.030	17.2	1.63	1FTS,1FTN
DBR 149 A	074437.96-280657.9	310-030653	15.9		2016.036	315.5	9.91	1FTN
B	074437.44-280650.8	0618-0148729	18.2					
DBR 149 A (4)	074437.96-280657.9	310-030653	15.9		2016.036	311.7	4.29	1FTN
C	074437.72-280655.0	not identified	19.2					
DBR 150	074447.52-280504.4	310-030695	15.2	18.2	2016.036	114.3	4.84	1FTN
DBR 151	074433.34-280210.0	310-030637	16.5	18.4	2016.036	262.3	4.47	1FTN
DBR 152	074439.97-275854.1	311-029824	14.7	16.3	2016.030	153.5	4.29	1FTS,1FTN
DBR 153	074440.33-275937.2	0620-0166885	18.1	19.0	2016.036	347.9	2.66	1FTN
DBR 154	074442.47-280024.0	0619-0159023	18.4	19.1	2016.030	93.0	1.44	1FTN
DBR 155	085724.74-625511.8	136-018020	15.2	16.5	2016.030	267.9	2.41	2FTS
DBR 156	085757.11-625623.3	136-018087	12.3	15.2	2016.030	224.5	4.28	2FTS
DBR 157	061441.61+223111.1	563-026260	16.1	16.9	2016.028	256.2	4.51	1FTS
DBR 158	061435.96+223120.2	563-026241	12.0	17.5	2016.028	142.7	4.94	1FTS
DBR 159	061414.90+223011.1	563-026149	15.8	17.9	2016.028	129.5	3.09	1FTS
DBR 160	061419.78+223317.9	563-026182	13.6	17.8	2016.028	21.5	4.64	1FTS
DBR 161	062615.34+393527.3	1295-0168895	17.1	19.5	2016.054	238.7	3.33	1FTN

(3) The pairs ALD 114 AB et DAM 452 AC have the same main component A. The new couples discovered are called DBR 140 AD and DBR 140 EF in this system that forms a star cluster.
(4) The pair STF 149 AB has a third companion not indexed in the WDS, is called DBR 149 AC.

NEW DOUBLE STARS

Discovered by: A. Debackère using Gemini Telescope, Winer Observatory University of Iowa and with LCOGT global telescope network.
(continuation)

STAR	Precise Coord	UCAC4 USNO-B1.0	Mag.	Epoch	θ (°)	ρ (″)	Obs
DBR 162	062700.81+392929.8	648-039591	16.2 19.2	2016.054	11.2	2.36	1FTN
DBR 163	062704.33+392949.9	648-039599	15.1 17.9	2016.054	99.5	4.14	1FTN
DBR 164	132501.03-430643.3	235-066495	15.2 17.9	2016.131	84 3	.33	3Q64
DBR 165	132502.52-425818.0	236-065686	15.4 16.4	2016.131	297.5	1.98	3Q64,1FTS
DBR 166	132507.43-430409.5	235-066507	14.1 16.6	2016.116	312.3	2.65	1Q64,1FTS
DBR 167	132508.98-430028.5	235-066511	17.1 18.1	2016.131	358.2	3.06	3Q64,1FTS
DBR 168	132512.14-430710.5	0468-0335160	17.7 18.0	2016.131	346.5	2.79	3Q64
DBR 169	132528.92-425455.5	236-065739	16.6 17.8	2016.13	271.7	3.24	3Q64
DBR 170	132540.18-425834.6	236-065759	17.4 17.6	2016.116	50.5	1.52	1Q64,1FTS
DBR 171	132547.86-425828.4	236-065782 1	6.7 17.5	2016.131	174.3	2.73	3Q64,1FTS
DBR 172	132548.35-430315.7	235-066636 15	.8 17.9	2016.131	44.4	4.08	3Q64, 1FTS
DBR 173	132548.79-430051.6	235-066639	15.5 17.7	2016.13	66.6	3.89	3Q64,1FTS
DBR 174	132452.11-433956.1	232-064068	17.2 17.5	2016.117	169.2	3.55	1Q64
DBR 175	132502.83-433956.5	232-064093	15.8 17.3	2016.117	68.9	3.30	1Q64
DBR 176	132511.98-433709.0	232-064109	16.2 17.7	2016.117	338.1	3.70	1Q64
DBR 177	132515.46-433634.1	232-064121	13.3 15.4	2016.117	232.5	5.30	1Q64
DBR 178	132520.80-433641.5	232-064133	16.3 17.5	2016.117	197.4	3.47	1Q64
DBR 179	132526.65-430009.9	235-066566	16.8 16.9	2016.131	349.5	2.06	3Q64,1FTS
DBR 180	134802.74-305044.6	296-075172	13.3 13.4	2016.249	297.8	2.77	2K91,2Q64
DBR 181	134808.49-305629.5	0590-0306801	16.7 18.6	2016.249	55.4	2.91	2K91,2Q64
DBR 182	173515.86-393703.5	302-136539	14.3 16.4	2016.245	298.9	3.97	1K91,1W85
DBR 183	173517.90-294203.5	302-136554	14.1 16.7	2016.216	67.4	4.27	1K91
DBR 184	173521.45-294221.2	302-136590	10.5 15.0	2016.216	338.7	3.22	1K91
DBR 185 AB	173531.65-294208.4	302-136658	10.0 10.8	2016.216	15.7	7.87	1K91
DBR 185 A	173531.65-294208.4	302-136658	10.0	2016.216	93.7	8.54	1K91
C		302-136660	13.7				
DBR 186	173533.09-293328.3	303-143451	15.4 15.9	2016.245	120.7	4.82	1K91,1W85
DBR 187	173543.05-293256.3	303-143536	15.5 16.7	2016.245	210.9	3.39	1K91,1W85
DBR 188	173545.71-293228.3	303-143564	15.3 15.4	2016.245	345.7	3.61	1K91,1W85
DBR 189	173557.26-293632.1	302-136908	15.2 16.0	2016.245	134.0	2.44	1K91,1W85
DBR 190	173607.35-294119.9	302-137001	13.8 15.0	2016.245	58.8	4.48	1K91,1W85
DBR 191	173613.14-293123.7	303-143810	13.0 14.8	2016.245	30.1	5.33	1K91,1W85
DBR 192	173617.00-294232.5	302-137096	15.4 15.7	2016.216	145.1	1.97	1K91
DBR 193	173620.83-293101.0	303-143889	14.2 16.3	2016.245	300.4	3.84	1K91,1W85
DBR 194	013409.60-631407.2	134-001402	11.4 13.6	2016.422	315.3	7.84	1K91

NEW DOUBLE STARS

Discovered by: A. Debackère using Gemini Telescope, Winer Observatory University of Iowa and with LCOGT global telescope network.
(continuation)

STAR	Precise Coord	UCAC4 / USNO-B1.0	Mag.	Epoch	θ (°)	ρ (″)	Obs
DBR 195	143845.45-820426.3	040-010602	12.5 13.2	2016.440	144.8	6.67	1Q64
DBR 196	134749.20-305449.2	296-075152	14.9 15.3	2016.249	46.8	6.83	2K91,2Q64
DBR 197	134752.01-310037.6	295-076146	14.0 17.2	2016.249	118.3	5.26	2K91,2Q64
DBR 198	195551.21-324010.5	287-206724	14.9 16.0	2016.733	113.0	1.66	2FTS

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 (″)	Notes
SCA 173	20 40 13.66 +20 39 15.7	10.3 10.8	2016.655	171	1.14	
SCA 174 AC	21 07 12.71 +14 34 34.3	10.4 12.1	2016.660	286	1.83	AB is HEI 79
SCA 174 BC	21 07 12.71 +14 34 34.3	11.6 12.1	2016.655	227	0.28	
SCA 175 AC	20 24 48.54 +22 54 52.7	10.0 12.3	2016.676	131	2.50	AB is BRT 2839
SCA 175 BC	20 24 48.54 +22 54 52.7	11.5 12.3	2016.655	116	1.08	

ANNOUNCEMENTS

WEBSITE MIRROR

Due to difficulties of some users reliably accessing the catalogs and ancillary double, binary and multiple star information maintained at the U.S. Naval Observatory we have established a mirror site at Georgia State University. Specifically :

- The Washington Double Star (WDS) Catalog: `http://www.astro.gsu.edu/wds/`

- Sixth Catalog of Orbits of Visual Binaries:
  `http://www.astro.gsu.edu/wds/orb6.html`
- Catalog of Rectilinear Elements: `http://www.astro.gsu.edu/wds/lin1.html`
- Fourth Catalog of Interferometric Measurements of Binary Stars:
  `http://www.astro.gsu.edu/wds/int4.html`
- The Third Photometric Magnitude Difference Catalog:
  `http://www.astro.gsu.edu/wds/dm3.html`
- Double Star Library (webpage of former IAU Commission 26: Double and Multiple Stars):
  `http://www.astro.gsu.edu/wds/dsl.html`
- IAU Commission G1 (Binary and Multiple Stars) Webpage:
  `http://www.astro.gsu.edu/wds/bsl/`

Doug Gies and Justin Cantrell (GSU) are thanked for hosting the mirror and for their aid in enabling it. Due to IT/IA restrictions, updates cannot be automatically made but will be made as frequently as possible. Finally, there will inevitably be a few problems with incorrect links, etc., and we would appreciate notification of any missing or incorrect items you may run across.

Brian D. Mason

NEW CANDIDATE COMPANION TO EXOPLANET BINARY STAR WASP-85 (BU 793 AB)

BU 793 (WDS 11436+0634), WASP-85, is a visual binary system, about 125-150 pc distant, composed of solar-type stars (G5V and K0V) with V magnitudes of 10.9 and 11.6, and separated by 1.5 arcseconds. It was discovered in 1881 and has 24 astrometric measurements listed in the WDS catalog. WASP-85 A hosts an inflated transiting hot Jupiter (WASP-85Ab) discovered by Kepler satellite in 2014. The planet, with 1.27 Jupiter mass, orbits with a semimajor of 0.039 AU and with an orbital period of 1.4786 days.

The binary system WASP-85 has a moderate proper motion of $\mu(\alpha)$ = -80.9 ± 1.9 and $\mu(\delta)$ = +10.6 ± 1.8 mas yr^{-1} (Tycho-2) and the stellar components WASP-85 A and B have common radial velocities (Vrad(B) - Vrad(A) = -0.57 ± 0.04 km s^{-1}). Our preliminary dynamical study strongly suggests that WASP-85 is a gravitationally bound binary system.

Manuel J. del Valle found the star 2MASS J11434596+0635056, with V = 16.36 (APASS catalog) and proper motion of $\mu(\alpha)$ = -87.0 ± 3.8 and $\mu(\delta)$ = +12.2 ± 3.8 mas yr^{-1} (PPMXL) at 141″ separation at direction 57.2 degrees from WASP-85. From multi-band photometry (JHK from 2MASS, BVgri from APASS and ugriz from SDSS), it is a M2.5V star at about 130 pc. The common proper motion and common distance suggest that it could be a new physical companion to the exoplanet host binary star WASP-85, converting it in one of the few triple systems hosting planets.

Manuel J. del Valle & Francisco Rica

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The deadline for contributions to Information Circular No. 191 is:

February 15th 2017

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