Bull. Astron. Belgrade № 149 (1994), 95 – 102

UDC 521.328
Professional paper

NEW ORBITAL ELEMENTS OF FIVE VISUAL BINARIES

D. Olević[1], G. M. Popović[1], D. J. Zulević[1], Z. Ćatović[2]

[1] *Astronomical Observatory, Volgina 7, 11050 Belgrade, Yugoslavia*

[2] *Mathematical Faculty, Studentski trg 16, p.o.b. 550, 11000 Belgrade, Yugoslavia*

(Received: May 16, 1994)

SUMMARY: We present new orbital elements, masses and dynamical parallaxes for visual binaries:
ADS 9425, ADS 11311, ADS 11971, ADS 12631 and ADS 16242.

COMMENTS

According to our analisys of the pair ADS 11971 BC, we can say that the sugesstion of Van den Bos (Bos, Van den, 1962.) does not hold. The pair considered is orbital one. Van Biesbreck calculated (Van Biesbreck, 1954.) the dynamical paralax and got its value as 0."015. The orbital elements of this pair are published in IAU Infomation Circular Comm. 26, No. 109, with the same values, exept the one of the ascending node, which was $\Omega = 100.°3$.

The orbital elements of binaries are published in IAU Information Circulars Comm. 26: ADS 11971 BC in IC No. 109, 1989., and pairs ADS 9425 AB, ADS 11311 AB, ADS 12631 AB and ADS 16242 AB in Information Circular No. 112, 1990.

RESULTS

Tables 1 and 3 contain the basic data concerning our pairs: the orbital elements (classical and vectorial), the masses, the dynamical parallaxes, the observations used for the purpose of calculating the orbit and the corresponding differences and the ephemeris.

Table 1 Orbital elements, masses and paralaxes

Name ADS IDS vis. mags. Sp.	P n T a	e i Ω ω	A B F G	C H T_Ω T_υ	$\mathcal{M}_{A\odot}$ $\mathcal{M}_{B\odot}$ M_A M_B	π	Author
OΣ 288 AB 9425 14534N1543 6.9-7.6 G0	210.^{y}37 1.°7113 1828.80 0.″960	0.810 135.°1 3.°5† 0.°0	+0.″9580 +0.″0590 +0.″0420 −0.″6820	±0.″0000 ±0.″6740 1828.80 1933.98	1.54 1.29 3.^{m}30 4.^{m}00	0.″0192	Zulević
OΣ 353 AB 11311 18207N7117 4.4-6.1 A0	401.^{y}85 0.°8959 1767.69 0.″614	0.236 103.°6 66.°9† 282.°7	−0.″0766 +0.″1794 +0.″2642 +0.″5385	∓0.″5822 ±0.″1315 1669.16 1858.75	6.60 3.40 −2.^{m}0 −0.^{m}3	0.″005	Olević- -Ćatović
Σ 2434 BC 11971 18576S0051 8.7 - 10.6 G5	292.^{y}36 1.°2314 1729.45 1.″531	0.662 115.°3 99.°3† 236.°9	−0.″3898 −0.″9206 −0.″5809 +0.″1980	∓1.″1595 ∓0.″7459 1763.76 2013.71	0.74 0.65 6.^{m}2 8.^{m}1	0.″031	Popović- -Ćatović
A 162 AB 12631 19351N2328 9.0-10.3 A0	182.^{y}40 1.°9737 1835.80 0.″285	0.561 64.°1 100.°5† 267.°7	+0.″1244 +0.″0114 −0.″0470 +0.″2809	∓0.″2564 ∓0.″0101 1668.90 2004.02	1.80 1.80 2.^{m}0 2.^{m}0	0.″058	Olević- -Ćatović
β 711 AB 16242 22455N1111 9.7 - 11.7 K8	281.^{y}30 1.°2798 1818.60 2.″071	0.676 109.°1 155.°3† 299.°0	−1.″1604 −0.″1190 −1.″5091 +1.″0559	∓1.″7116 ∓0.″9488 1880.12 1912.45	0.69 0.48 8.^{m}0 10.^{m}0	0.″046	Popović- -Ćatović

†(epoch 2000.0)

Table 2a Measuremants and (O-C)

t	θ_t	ϱ	n	Obs.	$\Delta\theta$	$\Delta\varrho$
ADS 9425 = IDS 14534N1543 = OΣ 288 AB						
1845.41	222°.8	0".42	9	Ma6, OΣ3	+1°.4	−0".20
1850.18	216.6	0.51	5	OΣ2, Ma3	+1.8	-0.26
1863.44	204.5	1.12	3	OΣ	+0.0	+0.03
1870.13	199.7	1.24	6	Δ	-1.4	+0.03
1877.47	196.9	1.30	7	Sp4, Hl3	-1.3	-0.07
1885.95	196.6	1.44	11	Per5, Sp6	-1.3	-0.01
1890.02	192.6	1.45	20	Sp9, HΣ8	-1.5	-0.05
1893.47	190.7	1.68	4	Hu4, Doo3	-2.5	+0.14
1900.02	190.0	1.68	14	Hu3, Doo3,...	-1.3	+0.08
1902.07	191.2	1.82	5	Bonyer	+0.4	+0.21
1902.42	189.9	1.66	40	Doo3,...	-0.8	+0.04
1907.34	188.7	1.73	66	Com6, Fox3,...	-0.9	+0.08
1912.34	187.8	1.64	60	Fox3, Gro14,...	-0.5	-0.04
1919.99	186.6	1.70	36	Dob2,...	+0.0	-0.01
1924.66	185.6	1.74	47	Per5,...	+0.0	+0.01
1960.40	177.2	1.61	7	Wor3,...	-0.4	-0.04
1969.22	175.0	1.44	7	Walk3, Wor4	-0.4	-0.15
1980.57	172.8	1.43	4	A8 3,A9 1	+0.6	-0.04
1984.41	171.2	1.38	5	Wor3, C2 2	+0.2	-0.04
1986.40	170.9	1.36	1	C4	+0.6	-0.04
1989.45	169.5	1.40	2	D2	+0.3	+0.05

Table 2b Measuremants and (O-C)

t	θ_t	ϱ	n	Obs.	$\Delta\theta$	$\Delta\varrho$
ADS 11311 = IDS 18207N7117 = $O\Sigma$ 353 AB						
1856.13	63°.6	0".56	6	$O\Sigma$	+4°.1	+0".01
1868.77	63.6	0.5 ...	6	δ	+7.6	-0.01
1878.59	52.2	0.39	8	H1	-0.7	-0.08
1881.12	57.7	0.44	9	β	+5.7	-0.02
1898.86	50.8	0.38	6	Hu	+6.8	+0.01
1900.94	49.0	0.42	4	Com	+6.2	+0.06
1903.92	55.4	0.40	3	VBs	+14.4	+0.06
1905.80	47.7	0.45	9	VBs	+8.0	+0.12
1906.47	43.6	0.27	3	Lau	+4.3	-0.06
1909.55	49.8	0.43	4	Dob	+12.8	+0.12
1909.68	61.7	0.67	2	Sto	+24.8	+0.36
1915.52	31.6	0.30	1	A	-0.1	+0.02
1921.30	32.3	0.23	3	A	+6.9	-0.02
1923.69	33.6	0.25	5	Mag	+11.2	+0.01
1940.59	350.7	0.179	1	F	-0.4	-0.00
1940.68	8.2	0.23	1	VBs	+17.3	+0.05
1941.52	323.9	0.125	1	G	-25.0	-0.05
1943.67	343.4	0.19	4	VBs	-0.30	+0.01
1945.72	330.0	0.155	1	F	-8.7	-0.02
1946.54	331.2	0.18	3	VBs	-5.4	+0.00
1948.64	326.9	0.17	4	VBs	-4.6	-0.01
1951.79	321.2	0.15	2	VBs	-2.8	-0.03
1953.66	318.1	0.17	4	M	-1.6	-0.02
1958.58	310.8	0.13	1	B	+1.4	-0.07
1960.45	303.3	0.19	5	Wor	-2.9	-0.02
1960.75	304.3	0.29	6	VBs	-1.0	+0.08
1961.57	300.0	0.26	2	Cou	-3.9	+0.05
1962.67	299.4	0.18	4	B	-2.6	-0.03
1968.75	289.6	0.25	6	Bz	-3.3	+0.01
1980.773	280.5	0.323	1	McA	+0.22	+0.018
1980.795	279.4	0.325	1	McA	-0.86	+0.020
1981.353	280.1	0.311	1	McA	+0.29	+0.003
1986.405	277.4	0.357	1	McA	+1.36	+0.021

Table 2c Measuremants and (O-C)

t	θ_t	ϱ	n	Obs.	$\Delta\theta$	$\Delta\varrho$
ADS 11971 = IDS 18576S0051 = Σ 2434 AB						
1831.57	80°.5	1".93	3	Σ	+1°.0	+0".03
1866.58	69.2	1.79	4	Δ	-0.5	+0.06
1880.59	64.9	1.46	3	β	-0.1	-0.16
1890.78	57.9	1.55	2	Hl	-3.2	+0.03
1896.47	59.4	1.32	2	Lv	+0.7	-0.14
1896.49	53.8	1.12	3	A	-4.9	-0.34
1903.73	53.4	1.33	2	VBs	-2.0	-0.06
1904.65	52.4	1.22	4	Com	-2.5	-0.16
1907.72	52.6	1.27	15	Frm1,Doo3,Com4,Vbs3,MCO4	-0.8	-0.07
1910.60	52.2	1.39	4	Ol2,β2	+0.1	+0.07
1912.20	48.2	1.21	7	Com6,A1	-2.7	-0.08
1917.20	47.2	1.10	17	Com	-0.9	-0.14
1922.13	45.6	1.12	4	Chan2,Lv2	+0.7	-0.06
1924.84	42.7	1.22	6	B4,VBs2	-0.3	+0.07
1935.06	36.1	1.24	3	BZ	+1.1	+0.20
1942.42	29.2	1.16	3	Voûte	+1.1	+0.20
1948.67	27.2	1.05	3	VBs	+5.8	+0.15
1955.32	20.2	0.92	5	BZ	+6.9	+0.08
1957.482	16.9	0.90	4	BOS	+6.5	+0.70
1961.52	11.7	0.79	4	BOS	+6.9	-0.01
1961.632	10.0	0.74	4	Wor	+5.3	-0.06
1961.74	6.3	0.84	4	Hz	+1.8	+0.04
1962.42	9.0	0.60	1		+5.6	-0.20
1962.78	6.3	1.00	3	BZ	+3.3	+0.23
1965.73	357.6	0.79	1	Cou	-1.0	+0.01
1969.72	355.2	0.75	4	BZ	+2.8	-0.02
1974.73	350.1	0.69	5	Wor	+5.8	-0.07
1975.50	347.1	0.76	3	Hz	+4.0	+0.01
1975.59	349.5	0.70	2	Walker	+6.5	-0.05
1989.552	315.6	0.54	3	Zul	-4.6	-0.22
1989.572	316.8	0.58	3	POP	-3.3	-0.18

Table 2d Measuremants and (O-C)

t	θ_t	ϱ	n	Obs.	$\Delta\theta$	$\Delta\varrho$
ADS 12631 = IDS 19351N2328 = A 162 AB						
1900.66	144°.6	0".21	3	A	−5°.6	−0".02
1914.57	166.5	0.19	3	A	-1.1	-0.02
1917.64	172.9	0.22	2	A	+1.0	+0.02
1921.30	178.1	0.21	3	A	+0.9	+0.01
1924.27	178.1	0.20	2	A	-3.5	+0.00
1930.53	188.1	0.20	2	A	-3.0	+0.01
1931.27	182.7	0.19	4	VBs	-9.5	-0.00
1933.56	202.6	0.21	2	Gro	+6.9	0.02
1934.81	197.3	0.20	1	A	-0.3	+0.01
1935.48	199.5	0.20	2	A	+0.9	+0.00
1937.07	191.6	0.20	4	Voûte	-9.5	+0.00
1944.36	208.6	0.20	4	Voûte	-3.3	+0.00
1944.84	219.0	0.21	2	VBs	+6.4	+0.01
1946.57	217.7	0.16	3	Jeff	+2.6	-0.04
1950.60	207.2	0.24	1	MRz	-13.4	+0.03
1951.73	222.4	0.18	2	MRz	+0.3	-0.03
1952.80	229.7	0.22	2	MRz	+6.1	+0.01
1953.55	226.3	0.16	2	VBs	+1.8	-0.05
1955.83	216.0	0.22	1	Mull	-11.5	+0.01
1957.95	227.3	0.17	3	VBs	-28.2	-0.05
1958.65	229.7	0.23	4	B	-1.3	+0.01
1958.65	229.9	0.22	4	B	-1.1	+0.00
1960.65	246.1	0.23	4	Cou	+12.7	+0.01
1962.48	235.5	0.22	4	B	-0.0	-0.00
1962.60	245.2	0.24	2	Holden	+9.5	+0.02
1962.68	238.4	0.22	3	Cou	+2.6	-0.00
1964.70	238.0	0.20	5	Wor	+0.3	-0.02
1964.75	242.5	0.25	4	Hz	+4.4	+0.02
1965.72	244.3	0.26	4	Hz	+5.1	+0.03
1965.73	236.9	0.23	2	Mull	-2.3	+0.02
1969.72	239.8	0.25	3	Cou	-3.8	+0.02
1982.920	252.3	0.2435	3	McA	-4.56	+0.000
1985.309	255.4	0.2398	5	McA	-3.79	+0.003

Table 2e Measuremants and (O-C)

t	θ_t	ϱ	n	Obs.	$\Delta\theta$	$\Delta\varrho$
ADS 16242 = IDS 22455N1111 = β711 353 AB						
1878.59	79°.9	0".72	1	β	+3°.1	+0".15
1891.88	55.3	0.83	3	β	+0.1	-0.13
1893.70	53.4	1.24	1	W	+0.8	+0.26
1897.83	46.6	0.96	1	Brown	-0.5	-0.06
1898.74	47.6	0.99	3	A	+1.6	-0.04
1898.79	47.0	0.82	3	Bowyer	+7.6	-0.01
1899.78	44.5	1.07	1	Bryant	-0.2	+0.02
1901.12	45.2	0.88	3	Lewis	+2.1	-0.19
1902.27	44.0	0.95	6	Doo	+2.2	-0.13
1911.66	33.1	1.24	1	A	+0.8	+0.02
1915.13	28.8	1.30	9	Fox3,GrO1,Ol2,Roe3	-0.5	+0.03
1924.07	20.4	1.30	4	Jck1,Bail1,Plq2	-2.3	-0.11
1931.49	16.5	1.45	8	Fur2,WTL1/0,A1,B4	-1.7	-0.08
1937.80	13.4	1.59	4	SMW	-1.4	-0.05
1940.12	11.5	1.68	3	BAZ	-2.2	+0.01
1943.54	11.9	1.72	3	Vou	-0.2	+0.00
1945.33	10.7	1.82	3	VBs	-0.6	+0.07
1955.87	6.6	1.82	2	Cou	-0.5	-0.09
1957.56	4.6	1.86	5	B	-1.9	-0.07
1957.78	6.9	1.99	7	VBs	+0.5	+0.06
1959.75	5.0	1.91	3	Cou	-0.8	-0.05
1960.04	5.4	2.13	4	WOR	-0.3	+0.17
1961.60	4.5	2.15	4	B	-0.6	+0.16
1965.031	3.0	2.12	4	WOR	-1.0	+0.09
1967.701	1.6	2.30	3	VBS	-1.5	+0.24
1975.761	0.9	2.25	1	MLR	+0.2	+0.09
1980.631	0.0	2.34	1	HEI	+0.6	-0.00

Table 3 Ephemerides

	ADS9425		ADS11311		ADS11971		ADS12631		ADS16242	
t	θ	ϱ	θ	ϱ	θ	ϱ	θ	ϱ	θ	ϱ
1995.00	167.11	0.126	270.90	0.38	317.79	0.76	268.97	0.23	355.67	2.34
1997.00	166.26	0.123	269.88	0.40	314.62	0.77	271.20	0.23	355.19	2.35
1999.00	165.37	0.119	268.92	0.41	302.06	0.77	273.57	0.22	354.71	2.36
2001.00	164.41	0.116	268.00	0.42	298.88	0.76	276.13	0.21	354.24	2.37
2003.00	163.39	0.112	267.14	0.43	295.64	0.75	278.94	0.20	353.77	2.36
2005.00	162.30	0.108	266.31	0.44	296.64	0.75	282.12	0.18	353.31	2.39

Acknowledgments – This work has been supported by Ministry for Science and Technology of Serbia through the project "Physics and Motions of Celestial Bodies".

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НОВИ ОРБИТАЛНИ ЕЛЕМЕНТИ ПЕТ ВИЗУЕЛНИХ ДВОЈНИХ ЗВЕЗДА

Д. Олевић[1], Г. М. Поповић[1], Д. Ј. Зулевић[1], З. Ћатовић[2]

[1] *Астрономска опсерваторија, Волгина 7, 11050 Београд, Југославија*

[2] *Математички факултет, Студентски трг 16, п. фах 550, 11000 Београд, Југославија*

УДК 521.328
Стручни рад

Приказани су резултати израчунавања нових орбиталних елемената, маса и динамичких паралакси за следеће визуелне парове звезда: ADS 9425, ADS 11311, ADS 11971, ADS 12631 и ADS 16242.