

## ORBITAL ELEMENTS OF FIVE VISUAL BINARIES

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(Received: February 13, 1997)

**SUMMARY:** This paper presents the orbital elements of five binary stars: WDS 00308N4732 = ADS 416 = BU 394, WDS 00583N2124 = ADS 805 = BU 302, WDS 01233N5808 = ADS 1105 = STF 115, WDS 08315S1934 = ADS 6862 = I 489 and WDS 20156N4339 = ADS 13611 = A 2095. For each pair are given in addition to the orbital elements, the dynamical parallax, the mass, the absolute magnitudes, the measures, the residuals (O-C) and the ephemerides for the next ten years.

The orbital elements of the binary stars have been computed by using the method of Van den Bos (1926) and Popović-Pavlović (1995). The dynamical parallaxes were computed by use of the method of Baize and Romani (1946). The orbital elements with the dynamical parallaxes, the total masses, the absolute magnitudes and the major axes are given in Table 1, the ephemerides in Table 2. The measures

and the comparison with measures are given in Table 3. The orbits are determined for the first time.

*Acknowledgements.* – This work has been supported by Ministry of Science and Technology of Serbia through the project "Astrometrical, Astrodynamical and Astrophysical Researches".

Table 1.

## Orbital elements

ADS Name WDS	416 BU 394 00308N4732	805 BU 302 00583N2124	1105 STF 115 01233N5808	6862 I 489 08315S1934	13611 A 2095 20156N4339
mag. Sp.	8.5–8.7 GO	6.7–8.1 AO	7.1–7.3 F5	5.9–6.5 AO	8.9–8.9 F5
P (y)	142.14	481.19	214.77	147.21	118.91
n (°)	2.5327	0.7482	1.6762	2.4454	3.0275
T (y)	1992.37	2123.28	1983.88	2021.86	2021.94
e	0.847	0.015	0.918	0.378	0.685
a (")	0.689	0.710	0.864	0.428	0.292
i (°)	78.0	52.7	98.3	115.9	97.4
$\omega$ (°)	2.0	182.4	131.1	226.7	93.4
$\Omega$ (°)	102.1	94.0	140.2	103.4	142.7
$\pi_{\text{dyn}}$ (")	0.0205	0.0074	0.0175	0.0085	0.0085
a (A.J.)	33.6	96.0	49.3	50.4	34.4
$\mathcal{M}_{\text{AB}}$ (☉)	1.87	3.83	2.59	5.82	2.87
$M_{\text{A}}$ (abs. mag.)	5.1	1.0	3.3	0.6	3.6
$M_{\text{B}}$ (abs. mag.)	5.3	2.4	3.5	1.2	3.6
$T_{\Omega}$ (y)	1992.34	2360.60	1978.37	2060.64	2015.48
$T_{\text{U}}$ (y)	2058.41	2120.20	1984.44	2031.37	2027.53
A (")	-0.1493	+0.0673	+0.4961	-0.0644	+0.0364
B (")	+0.6725	-0.7064	-0.2915	-0.3175	+0.0196
F (")	-0.1355	+0.4266	+0.4479	-0.1970	+0.2307
G (")	-0.0535	+0.0594	-0.4794	+0.2738	-0.1785
C (")	$\pm 0.0234$	$\mp 0.0234$	$\pm 0.6442$	$\mp 0.2806$	$\pm 0.2892$
H (")	$\pm 0.6737$	$\mp 0.5645$	$\mp 0.5618$	$\mp 0.2645$	$\mp 0.0170$

Table 2.

## Ephemerides

WDS	00308N4732		00583N2124		01233N5808		08315S1934		20156N4339	
t	$\theta$	$\rho$	$\theta$	$\rho$	$\theta$	$\rho$	$\theta$	$\rho$	$\theta$	$\rho$
1997.00	258° 5	0" 14	177° 6	0" 43	181° 2	0" 13	318° 4	0" 26	152° 8	0" 22
1998.00	263.6	0.19	178.8	0.43	177.7	0.15	315.9	0.27	152.3	0.22
1999.00	266.6	0.24	180.2	0.43	174.9	0.71	313.4	0.27	151.8	0.22
2000.00	268.6	0.28	181.4	0.43	172.6	0.19	311.0	0.28	151.3	0.22
2001.00	270.1	0.33	182.7	0.43	170.7	0.20	308.7	0.28	150.8	0.23
2002.00	271.2	0.37	183.9	0.43	169.1	0.22	306.5	0.29	150.4	0.23
2003.00	272.1	0.41	185.1	0.43	167.7	0.24	304.3	0.29	149.9	0.23
2004.00	272.8	0.44	186.4	0.43	166.5	0.25	302.2	0.30	149.4	0.23
2005.00	273.5	0.48	187.6	0.43	165.4	0.27	300.2	0.30	148.9	0.23
2006.00	274.0	0.51	188.8	0.43	164.5	0.29	298.1	0.30	148.5	0.22

## ORBITAL ELEMENTS OF FIVE VISUAL BINARIES

Table 3.

## Observations and residuals

## WDS 00308N4732

t	$\theta$	$\rho$	n	Obs.	$(O-C)_\theta$	$(O-C)_\rho$
1876.77	278° 0	0" 83	3	D	+0" 4	-0" 03
1885.74	278.5	0.97	4	STH	-0.5	-0.05
1888.68	281.5	1.08	3	T	2.1	0.02
1893.54	280.1	1.06	1	W	0.2	-0.06
1901.29	278.9	1.12	4	Doo	-1.8	-0.08
1924.64	281.5	1.10	4	GrO	-1.2	-0.17
1936.07	283.6	1.23	3	Baz	-0.1	0.01
1948.712	286.0	1.12	4	Fok	1.1	0.01
1953.03	285.4	1.20	2	VBs	0.0	0.14
1954.790	284.72	1.00	5	Rab	-0.9	-0.03
1959.49	285.9	0.87	6	GrO	-0.4	-0.09
1963.635	287.8	0.77	4	Wor	0.9	-0.11
1964.846	286.6	0.66	2	Wor	-0.6	-0.20
1966.888	289.0	0.88	2	Wor	1.5	0.07
1971.750	288.9	0.64	4	Wor	0.2	-0.06
1973.68	289.8	0.84	1	Ole	0.5	0.20
1978.74	293.0	0.46	2	Hz	1.6	-0.03
1981.69	294.7	0.38	3	Hz	1.2	0.00
1986.883	302.8	0.14	4	Wor	-1.4	-0.02
1986.8859	303.2	0.152	1	McAlis	-1.0	-0.01
1987.7595	309.4	0.111	1	McAlis	-0.7	-0.01
1988.6552	322.4	0.074	1	Chara 3	-0.1	-0.01
1991.8934	97.2	0.105	1	Chara 3	0.5	0.00
1991.9016	96.8	0.102	1	Chara 3	0.0	0.00

Table 3. (continued)

WDS 00583N2124						
t	$\theta$	$\rho$	n	Obs.	$(O-C)_\theta$	$(O-C)_\rho$
1876.27	92° 5	0" 75	4	D	0° 1	0" 03
1883.53	94.3	0.82	5	En	-1.3	0.10
1887.53	97.0	0.61	6	Sp	-0.4	-0.11
1888.01	101.0	0.58	2	SBn	3.3	-0.14
1888.32	99.9	0.89	7	STH	2.1	0.17
1889.02	97.1	0.66	8	Sp	-1.0	-0.06
1898.01	101.0	0.58	2	BRF	-1.1	-0.13
1903.1	105.4	0.54	10	GrO	0.9	-0.16
1903.58	103.0	0.58	3	BOW	-1.7	-0.12
1908.74	106.6	0.65	10	Frm1, Wz2, Dob3...	-0.6	-0.04
1912.06	109.1	0.59	27	J10, Vdk2, GrO 7...	0.3	-0.09
1917.17	112.2	0.66	3	VBs	0.9	-0.01
1922.57	112.9	0.57	13	Plg2, Mag3, Bail 2..	-1.3	0.00
1926.96	116.3	0.65	4	Rab	-0.3	0.01
1933.65	123.5	0.65	3	Baz	3.1	0.03
1942.60	125.7	0.71	3	VOU	-0.3	0.12
1944.84	126.8	0.54	2	VBs	-0.7	-0.04
1948.898	130.51	0.64	2	Rab	0.2	0.07
1949.830	133.7	0.56	2	Mrz	2.7	0.00
1950.014	129.04	0.62	4	Rab	-2.1	0.06
1953.87	132.7	0.57	3	COU	-1.3	0.02
1953.948	131.12	0.58	6	Rab	-3.0	0.03
1957.962	135.60	0.52	5	Rab	-1.7	-0.01
1958.95	136.4	0.57	3	COU	-1.7	0.04
1961.795	136.9	0.45	1	HLD	-3.5	-0.07
1961.829	146.6	0.50	4	B	6.1	-0.02
1961.84	134.8	0.43	3	COU	-5.7	-0.07
1965.74	144.8	0.49	3	COU	0.9	-0.01
1965.88	141.6	0.50	3	COU	-2.4	0.00
1970.784	150.0	0.52	4	WOR	1.4	0.03
1971.196	150.8	0.59	3	Behall	1.8	0.10
1971.769	148.6	0.53	1	Ole	-1.0	0.05
1973.099	152.4	0.55	3	Behall	1.5	0.07
1974.806	150.5	0.42	3	Behall	-2.1	-0.06
1980.867	161.3	0.39	3	WOR	2.4	-0.07
1986.901	169.6	0.45	3	WOR	3.9	0.00
1986.8887	165.7	0.427	1	McAlis	0.0	-0.02
1987.7596	167.2	0.420	1	McAlis	0.5	-0.02
1988.6661	168.9	0.416	1	Chara 3	1.2	-0.03
1989.7119	170.5	0.413	1	Chara 3	1.5	-0.03
1991.8961	173.0	0.403	1	Chara 3	1.4	-0.03

## ORBITAL ELEMENTS OF FIVE VISUAL BINARIES

Table 3. (continued)

WDS 01233N5808						
t	$\theta$	$\rho$	n	Obs.	$(O-C)_\theta$	$(O-C)_\rho$
1836.71	150° 0	0".81	3	STF	-1.9	-0".04
1839.85	153.4	0.75	1	Ch	1.8	-0.13
1852.98	152.7	1.04	4	STT	2.2	0.06
1867.81	149.8	1.06	4	D	0.2	-0.01
1892.84	147.6	1.44	2	Gla	-0.6	0.29
1900.78	147.7	1.05	3	DO	-0.1	-0.11
1902.62	148.2	1.07	6	Hu 3,A3	0.5	-0.09
1909.95	146.6	1.16	11	ADS	-0.8	0.01
1912.87	147.2	1.04	8	ADS	-0.0	-0.11
1925.28	148.2	1.16	1	Opik	1.6	0.05
1934.47	145.1	0.96	3	Baz	-1.0	-0.11
1940.863	146.0	0.92	4	Fok	0.3	-0.10
1946.76	144.3	0.97	2	Mul	-1.0	0.00
1949.93	145.72	0.856	1	Hzg	0.7	-0.08
1949.93	144.62	0.854	1	Wkn	-0.4	-0.08
1953.949	143.92	0.83	6	Rab	-0.8	-0.06
1958.663	143.4	0.75	1	B	-0.9	-0.08
1958.74	142.2	0.47	8	GrO	-2.1	-0.36
1965.041	144.4	0.75	5	Wal	0.8	0.03
1972.934	140.2	0.60	4	Wor	-2.0	0.07
1973.705	147.6	0.64	1	Ole	5.6	0.13
1978.6181	138.7	0.346	1	McAlis	-1.3	0.02
1979.7730	138.2	0.304	1	McAlis	-0.9	0.03
1980.680	135.4	0.26	4	Wor	-2.6	0.04
1980.7178	136.4	0.269	1	McAlis	-1.6	0.05
1980.8871	139.0	0.253	1	McAlis	1.3	0.04
1980.8926	138.8	0.260	1	McAlis	1.1	0.05
1981.67	132.9	0.23	3	Hz	-3.2	0.07
1981.7008	135.5	0.206	1	McAlis	-0.5	0.05
1983.0690	127.1	0.115	1	McAlis	5.6	0.08
1983.7107	124.8	0.085	1	McAlis	(337.4)	0.05
1984.7045	327.2	0.033	1	McAlis	9.4	-0.06
1985.8430	312.4	0.082	1	McAlis	2.6	-0.02
1986.8861	303.4	0.090	1	McAlis	1.1	0.00
1987.7544	296.9	0.073	1	McAlis	2.4	-0.01
1987.7625	295.4	0.081	1	McAlis	0.9	0.00
1988.6554	283.8	0.073	1	Chara 3	-0.5	0.00
1990.7549	249.6	0.063	1	Chara 3	0.2	0.00
1991.9017	227.8	0.059	1	Chara 3	-0.1	0.00
1992.6778	-	< 0.170	1	Chara 3	(215.6)	(0.07)

Table 3. (continued)

WDS 08315S1934							
t	$\theta$	$\rho$	n	Obs.	$(O-C)_\theta$	$(O-C)_\rho$	
1911.29	107° 9	0" 48	2	I	3° 3	0" 00	
1915.3	102.2	0.69	2	I	0.6	0.18	
1926.3	90.2	0.48	2	VOU	-4.1	-0.05	
1941.203	82.3	0.48	4	B	-1.8	-0.01	
1942.89	85.3	0.59	4	Vou	2.5	0.11	
1962.139	60.5	0.35	4	B	-1.5	0.01	
1976.8578	28.2	0.237	1	McAlis	0.4	0.00	
1976.9234	27.5	0.243	1	McAlis	-0.1	0.01	
1977.1773	27.0	0.234	1	McAlis	0.2	0.00	
1977.9145	23.5	0.232	1	McAlis	-0.8	0.00	
1978.1466	23.3	0.238	1	McAlis	-0.2	0.01	
1979.1896	22.8	0.246	1	McAlis	2.9	0.02	
1980.1562	17.1	0.257	1	McAlis	0.7	0.03	
1983.0476	5.3	0.213	1	McAlis	-0.3	-0.01	
1984.0607	2.2	0.210	1	McAlis	0.5	-0.01	
1988.2520	346.9	0.230	1	McAlis	0.9	0.01	
1989.3058	342.2	0.224	1	Chara 3	0.0	0.00	
1989.9391	339.8	0.225	1	Chara 3	-0.2	0.00	
1990.2755	339.6	0.228	1	Chara 3	0.8	0.00	
1990.3488	338.9	0.226	1	Chara 3	0.3	0.00	
1990.9138	336.7	0.230	1	Chara 3	0.1	0.00	
1991.9052	333.2	0.231	1	Chara 3	-0.2	-0.01	
1993.1969	329.5	0.239	1	Chara 3	0.2	0.00	
WDS 20156N4339							
t	$\theta$	$\rho$	mag.	n	Obs.	$(O-C)_\theta$	$(O-C)_\rho$
1909.82	325° 8	0" 18		2	A	3° 7	0" 02
1911.51	319.6	0.16		1	A	-1.1	-0.02
1920.62	311.8	0.14		4	A	-3.2	-0.07
1932.34	too close			5	A	(306.5)	(0.17)
1943.789	294.3	0.14		1	VBs	2.7	0.03
1944.862	295.1	0.11		1	VBs	5.8	-0.00
1948.635	round	< 0.1		1	VBs	(279.1)	(0.09)
1948.725	"			1	VBs	(278.8)	(0.09)
1954.77	257.7	0.20		3	Dju	4.8	0.13
1954.798	round	< 0.1		1	VBs	(252.0)	(0.07)
1955.767	"			1	VBs	(247.0)	(0.06)
1957.621	"			1	VBs	(236.0)	(0.06)
1962.737	209.8	0.10		4	B	2.4	0.03
1965.685	single			1	Dju	(194.4)	(0.08)
1965.685	"			1	Pop	(194.4)	(0.08)
1983.1155	160.3	0.178		1	McAlis	-1.7	0.01
1987.7537	158.1	0.201		1	McAlis	-0.2	0.01

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САОПШТАВАЈУ СЕ ПУТАЊСКИ ЕЛЕМЕНТИ ЗА ПЕТ СИСТЕМА  
ВИЗУЕЛНО ДВОЈНИХ ЗВЕЗДА

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УДК 521.328  
Претходно саопштење

За системе ADS 416, ADS 805, ADS 1105,  
ADS 6862 и ADS 13611 одређени су по при пут

путањски елементи, паралаксе, масе као и друге  
астрофизичке величине.