

ORBITS OF TWO INTERFEROMETRIC AND ONE VISUAL BINARY STARS

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SUMMARY: This paper presents the orbital elements of three Binary Stars. Two of them are new computations (ζ Dra and 74 aqr), the one is revision of orbit which do not fit well recent observations (ADS 2538). For each pair are given in addition of the orbital elements, the O-C, the dynamical parallax, the mass, the absolute magnitudes and ephemerides.

The orbital elements the Binary Stars have been computed by using the method of Thiele-Innes. The dynamical parallaxes were computed by use of the method of Baize and Romani (1946) with magnitudes and spectral types taken from the Lick Index Catalogue of Visual Double Stars, for the pair ADS 2538. The orbital elements with the dynamical paral-

laxes, 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 in Table 3.

ADS 2538 - this is an astrometric orbit from coverage 0.4 period. ζ Dra - this is an interferometric orbit from coverage 1 period. 74 aqr - this is an interferometric orbit from coverage 0.5 period.

Table 1

Orbital elements

ADS 2538 = A 980	ζ Dra = Starikova	74 aqr = McAl 73
P = 214.54	P = 6.088	P = 19.25
n = 1°6780	n = 59°1334	n = 18°6979
T = 1970.30	T = 1980.76	T = 1977.09
e = 0.156	e = 0.000	e = 0.013
a = 0.365	a = 0.067	a = 0.077
i = 133°5	i = 0°0	i = 62°1
Ω = 150°0	Ω = 0°0	Ω = 110°5
ω = 90°0	ω = 0°0	ω = 0°0
π dyn = 0".006	π dyn = 0".009	π dyn = 0".006

$a = 68.8$ (AU)
 $M_{AB} = 4.9 \odot$
 $MA = 0.6$ abs.mag.
 $MB = 1.6$ abs.mag.
 $T = 2013.33$
 $A = +0''.1256$
 $B = +0''.2175$
 $F = +0''.3161$
 $G = -0''.1825$
 $C = +0''.2648$
 $H = 0''.0000$
 $MA = 6.8$ vis.mag.
 $MB = 7.8$ vis.mag.

$a = 7.4$ (AU)
 $M_{AB} = 10.9 \odot$
 $MA = -1.2$ abs.mag.
 $MB = -1.2$ abs.mag.
 $T = 1992.94$
 $A = +0''.0670$
 $B = 0''.0000$
 $F = 0''.0000$
 $G = +0''.0670$
 $C = 0''.0000$
 $H = 0''.0000$
 $MA = 3.95$ vis.mag.
 $MB = 3.95$ vis.mag.

$a = 12.8$ (AU)
 $M_{AB} = 5.7 \odot$
 $MA = 0.3$ abs.mag.
 $MB = 0.3$ abs.mag.
 $T = 1996.34$
 $A = -0''.0269$
 $B = +0''.0719$
 $F = -0''.0337$
 $G = -0''.0126$
 $C = 0''.0000$
 $H = +0''.0677$
 $MA = 6.6$ vis.mag.
 $MB = 6.6$ vis.mag.

Table 2

Ephemerides

ADS 2538 = WDS 03283N601			ζ Dra = WDS 17088N6543			74 Aqr = WDS 22535S1137		
t	θ	ρ	t	θ	ρ	t	θ	ρ
1992.0	1°0	0".28	1992.0	304°9	0".067	1992.0	35°8	0".037
1993.0	359.1	0.29	1992.2	316.7	0.067	1992.5	53.1	0.041
1994.0	357.3	0.29	1992.4	328.5	0.067	1993.0	66.8	0.047
1995.0	355.6	0.30	1992.6	340.3	0.067	1993.5	77.3	0.053
1996.0	353.9	0.30	1992.8	352.2	0.067	1994.0	85.5	0.059
1997.0	352.3	0.31	1993.0	4.0	0.067	1994.5	92.1	0.065
1998.0	350.7	0.31	1993.2	15.8	0.067	1995.0	97.8	0.070
1999.0	349.1	0.31	1993.4	27.6	0.067	1995.5	102.8	0.073
2000.0	347.6	0.32	1993.6	39.5	0.067	1996.0	107.4	0.075
2001.0	346.1	0.32	1993.8	51.3	0.067	1996.5	111.9	0.076

Table 3

Observations and residuals

ADS 2538 = WDS 03283N6015 = A 980

t	θ	ρ	mag.	n	Obs	(O-C) $_{\theta}$	(O-C) $_{\rho}$
1905.64	175°6	0".34	6.8-7.8	3	A	+0°5	-0".02
1908.84	170.4	0.35		1	A	-0.9	-0.01
1912.42	168.0	0.44		2	A	+0.8	+0.08
1916.20	162.6	0.40		2	A	-0.2	+0.06
1917.72	164.1	0.36		1	VBs	+3.0	0.00
1921.66	156.1	0.40		2	A	-0.5	+0.04
1925.81	154.9	0.35		2	A	+3.2	-0.01
1929.06	151.1	0.345		4	VBs	+3.3	-0.01
1943.85	128.6	0.27		3	VBs	+1.3	-0.04
1945.91	120.8	0.25		2	VBs	-3.1	-0.05
1950.89	112.2	0.25		2	VBs	-2.3	-0.02
1958.02	96.6	0.26		5	Bos 2, VBs 3	-1.4	+0.02
1960.59	103.0	0.25		2	Cou	+12.0	+0.02
1960.94	89.8	0.22		4	Wor	-0.2	-0.01
1962.83	80.9	0.22		4	Bos	-3.5	0.00
1968.27	66.3	0.29		4	Dj 1, DZ 3	-0.5	+0.08
1983.3802	20.0	0.258		2	McAl	+0.1	+0.01
1985.8431	13.7	0.27		1	McAl	-0.2	+0.02
1986.8944	11.8	0.271		1	McAl	+0.1	+0.01
1987.7545	10.2	0.28		1	McAl	+0.6	+0.02

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ζ Dra = WDS T7088N6543 = Starikova

t	θ	ρ	mag	n	Obs	(O-C) $_{\theta}$	(O-C) $_{\rho}$
1981.3840	32°	0".046	3.95-3.95	1	Starikova	-5.1	-0".02
1981.6867	55	0.096		1	Bal	0.0	+0.03
1982.5840	120.5	0.037		1	Tok	+12.4	-0.03
1983.4030	158.3	0.077		1	Tok	+1.8	+0.01
1984.7790	235.9	0.050		1	Tok	+2.0	-0.02
1985.741	- <	0.060		1	Tok	-	-0.01
1987.2673	22.9	0.096		1	McAl	-2.1	+0.03

74 Aqr = WDS 22535S1137 = McAl 73

t	θ	ρ	mag	n	Obs	(O-C) $_{\theta}$	(O-C) $_{\rho}$
1976.86	111.1	0".071	6.6-6.6	1	McAl	+2.7	-0".005
1977.69	114.7	0.0745		5	McAl	-1.3	0.000
1978.59	121.0	0.070		3	McAl	-3.9	+0.001
1979.65	144.9	0.065		2	McAl	+6.1	+0.008
1984.78	274.2	0.073		1	Tok	+2.1	+0.006
1985.65	283.2	0.073		5	McAl 4, Tok 1	+2.1	-0.001
1986.89	289.2	0.079		1	McAl	-2.7	+0.001

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ПУТАЊСКИ ЕЛЕМЕНТИ ДВЕ ИНТЕРФЕРОМЕТРИЈСКЕ И ЈЕДНЕ ВИЗУЕЛНО ДВОЈНЕ ЗВЕЗДЕ

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Претходно саопштење

Користећи нова микрометарска и интерферометријска мерења за системе ADS 2538, WDS 17088N6543 и WDS 22535S1137 одређени су нови

путањски елементи. Такође у раду је одређена паралакса и маса за наведене системе као и друге астрофизичке величине.