RECALCULATED ORBITS OF 8 DOUBLE STARS

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SUMMARY: The authors present new orbital elements for the following pairs: ADS 1227, ADS 3317, ADS 8128, ADS 8239, ADS 8242, ADS 8539, ADS 8949 and McA 61. Individual masses for these pairs are also calculated. For the pairs ADS 8128, ADS 8239, ADS 8539 and ADS 8949 calculated parallaxes are in accordance with the corresponding parallaxes of the Hipparchos Program.

1. INTRODUCTION

The latest observations of the pairs ADS 1227, ADS 3317, ADS 8128, ADS 8239, ADS 8242, ADS 8539, ADS 8949 and McA 61 show that the residuals (O - C) calculated from the previous elements are significant. For this reason we performed calculation of new orbital elements for the above pairs.

2. RESULTS

In Table 1. are given:
a) Basic information about the pairs,
b) Classical and vectorial orbital elements and
c) Absolute magnitudes.
Masses and parallaxes are given for the pairs located on the main sequence of H-R diagram. The

calculation is performed using the equation from Angelov (1993) and Angelov (1996). The ephemeris are given in Table 2 and graphical presentation of the calculated orbits and used observations is given in Figs. 1 – 8. The above results are also published in the IAU Circ. No. 141.

3. CONCLUSION

The obtained dynamical parallaxes (π_{dyn}) are in good accordance with Hipparchos results.

Table 1. Orbital elements, masses and parallaxes

WDS	01345+3440	04357+1010	11191+1416	11368-1221
ADS	1227	3317	8128	8239
Name	A1913 AB	CHARA 18 Aa	STF 1527	Bu 456
m	9.66-9.88	4.25-6.42	6.60-7.67	8.85-9.08
Sp.	G0	A5	F9V	G5
Author	Olević - Jovanović	Olević - Jovanović	Olević - Popović	Olević - Popović
$P(y)$	144.173	17.248	285.809	390.588
$n(^{o}/y)$	2.49700	20.87183	1.25958	0.92169
T	1983.105	1993.10	2021.56	1912.498
$a('')$	0.36	0.2275	2.3021	1.0293
e	0.7523	0.0408	0.7818	0.6274
$i(^{o})$	109.78	68.70	72.92	47.45
$\Omega(^{o})$	141.51	146.18	6.22	45.30
$\omega(^{o})$	77.45	227.00	207.30	317.33
$A('')$	0.013010	0.162503	-1.999998	0.867671
$B('')$	0.144555	-0.036155	-0.530143	0.206064
$F('')$	0.297311	-0.106839	1.114757	0.126972
$G('')$	-0.201899	0.139403	-0.482903	0.855876
$C('')$	0.337236	-0.154994	-1.009240	-0.513955
$H('')$	0.075074	-0.144533	-1.955436	0.557511
M_A	—	—	4.79	4.78
M_B	—	—	5.86	5.01
$\mathcal{M}_A\odot$	—	—	1.00	1.00
$\mathcal{M}_B\odot$	—	—	0.82	0.96
π''_{dyn}	—	—	0.0424	0.0154
π''_H	0.00433	0.02168	0.03117	0.02045
WDS	11374+4728	12244+2535	13343-0019	20330+4950
ADS	8242	8539	8949	–
Name	Ku 39	STF 1639 AB	STF 1757 AB	McA 61
m	10.03-10.30	6.41-7.55	7.37-8.32	6.7
Sp.	KIV5	A7V+F4V	K4III	A0+G
Author	Olević - Popović	Olević - Popović	Olević - Popović	Olević - Jovanović
$P(y)$	293.672	575.435	512.659	22.149
$n(^{o}/y)$	1.22586	0.62561	0.70222	16.25381
T	2004.67	1891.747	1941.533	1998.49
$a('')$	3.3704	1.2238	2.8616	0.1043
e	0.8579	0.9262	0.0609	0.8150
$i(^{o})$	65.96	150.38	58.48	79.38
$\Omega(^{o})$	125.23	140.84	90.68	41.36
$\omega(^{o})$	75.93	9.74	8.76	273.22
$A('')$	-1.560786	-0.821512	-0.261167	0.017076
$B('')$	-0.099099	0.901251	2.825357	-0.010539
$F('')$	1.613411	0.822697	-1.473298	0.077450
$G('')$	-2.862960	0.682203	-0.453162	0.069622
$C('')$	2.985612	0.102357	0.371453	-0.102353
$H('')$	0.748413	0.596138	2.410988	0.005752
M_A	—	1.79	5.24	–
M_B	—	2.93	6.19	—
$\mathcal{M}_A\odot$	—	1.86	0.92	—
$\mathcal{M}_B\odot$	—	1.44	0.77	—
π''_{dyn}	—	0.0119	0.0374	—
π''_H	0.02767	0.01023	0.04103	0.00220

Table 2. Ephemeris

t	θ	ρ	θ	ρ	θ	ρ	θ	ρ
	WDS 01345+3440		WDS 04357+1010		WDS 11191+1416		WDS 11368+1221	
2000.0	$309^o.2$	$0''.295$	$169^o.2$	$0''.165$	$68^o.7$	$0''.542$	$153^o.5$	$0''.895$
2001.0	308.3	0.301	189.2	0.123	73.2	0.508	154.2	0.902
2002.0	307.5	0.306	226.6	0.093	78.2	0.477	154.8	0.909
2003.0	306.7	0.310	271.1	0.107	83.9	0.449	155.4	0.916
2004.0	305.9	0.314	297.0	0.150	90.3	0.426	156.0	0.923
2005.0	305.2	0.317	311.2	0.191	97.4	0.407	156.6	0.930
2006.0	304.4	0.320	321.0	0.217	105.0	0.395	157.2	0.937
2007.0	303.7	0.323	329.5	0.220	113.0	0.389	157.8	0.944
2008.0	303.0	0.325	338.7	0.197	121.1	0.389	158.4	0.951
2009.0	302.3	0.327	352.2	0.151	129.1	0.396	158.9	0.957
2010.0	301.6	0.329	20.7	0.096	136.7	0.408	159.5	0.964
	WDS 11374+4728		WDS 12244+2535		WDS 13343-0019		WDS 20331+4950	
2000.0	119.2	0.872	324.6	1.712	127.1	1.965	50.9	0.054
2001.0	123.5	0.775	324.5	1.720	127.9	1.949	56.8	0.058
2002.0	129.2	0.654	324.4	1.728	128.7	1.933	62.5	0.057
2003.0	138.0	0.502	324.3	1.736	129.5	1.916	68.8	0.053
2004.0	155.7	0.326	324.2	1.744	130.3	1.900	76.1	0.049
2005.0	205.6	0.199	324.1	1.751	131.1	1.884	84.9	0.044
2006.0	263.3	0.296	324.0	1.759	132.0	1.868	95.9	0.039
2007.0	283.9	0.483	323.9	1.767	132.9	1.852	109.2	0.036
2008.0	292.9	0.663	323.8	1.774	133.7	1.836	124.4	0.035
2009.0	298.2	0.824	323.7	1.782	134.6	1.821	140.0	0.035
2010.0	301.9	0.966	323.6	1.789	135.5	1.805	154.4	0.038

ADS 1227
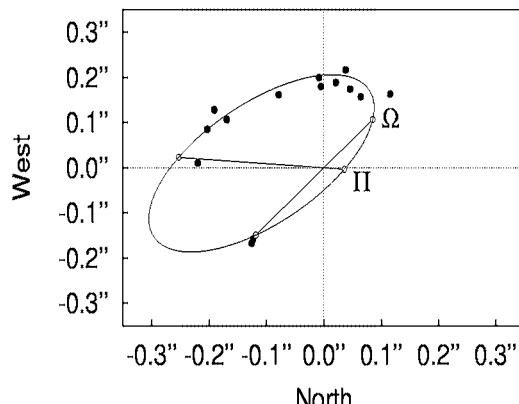
Fig. 1.

ADS 3317
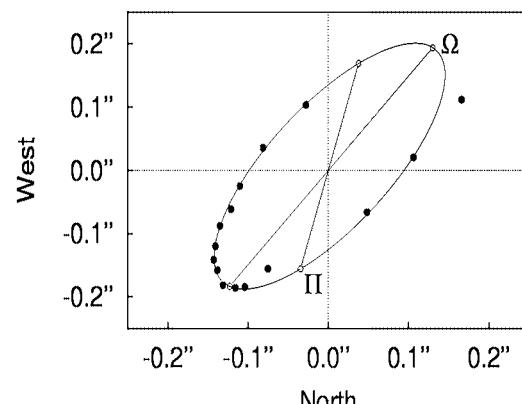
Fig. 2.

ADS 8128
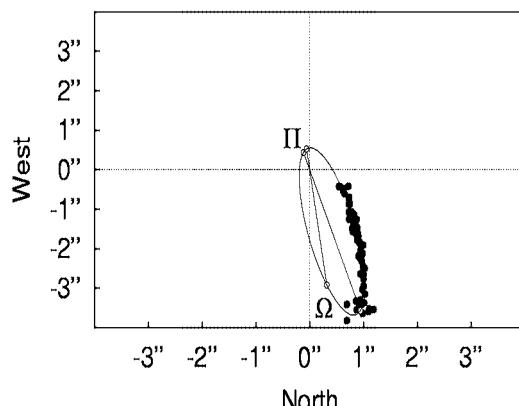
Fig. 3.

ADS 8239
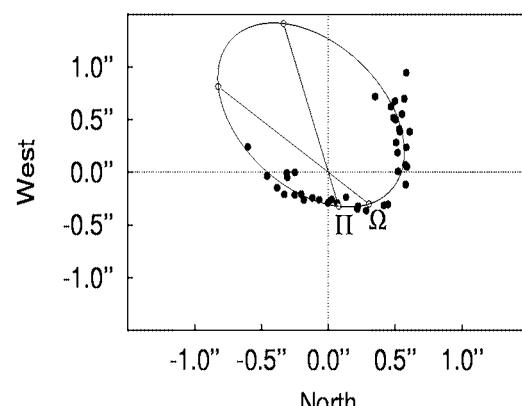
Fig. 4.

ADS 8242
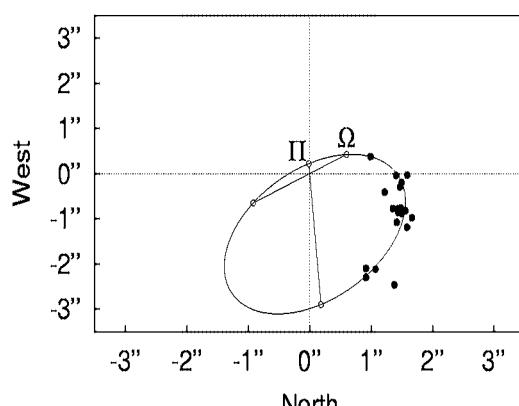
Fig. 5.

ADS 8539
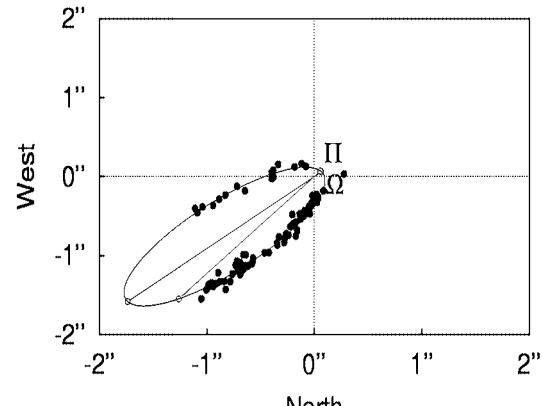
Fig. 6.

ADS 8949
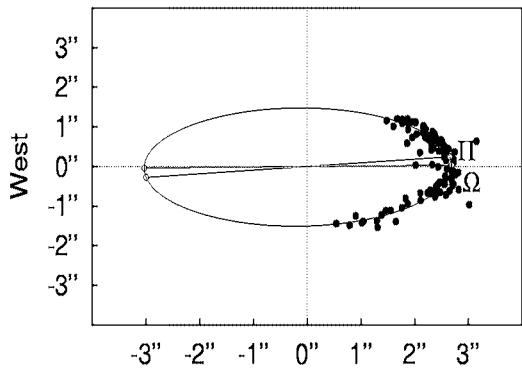
Fig. 7.

McA 61

Fig. 8.

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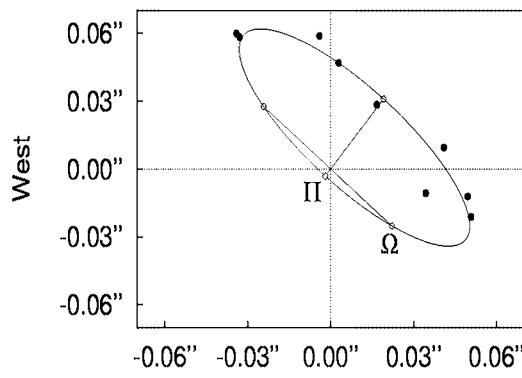
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НОВИ ПУТАЊСКИ ЕЛЕМЕНТИ 8 ДВОЈНИХ ЗВЕЗДА

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УДК 524.383
Претходно саопштење

Аутори овог рада дају нове путањске елементе за следеће двојне звезде: ADS 1227, ADS 3317, ADS 8128, ADS 8239, ADS 8242, ADS 8539, ADS 8949 и McA 61. За парове ADS 8128, ADS 8239, ADS 8539 и ADS 8949 израчунате су и паралаксе које се добро слажу са резултатима Hipparchos програма, као и појединачне масе система.