

RESULTS OF OBSERVATIONS OF THE SUN, MERCURY, VENUS AND MARS FROM BELGRADE

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SUMMARY: In this paper we present the results $(O-C)_\alpha$ and $(O-C)_\delta$ obtained during the period 1989-1990 in Belgrade from diurnal observations of the Sun, Mercury, Venus and Mars with the Large Meridian Circle "ASKANIA" $d=190\text{mm}$, $f=2578\text{mm}$.

Visual observations of the Sun, Mercury, Venus and Mars in right ascension and declination are being carried out with Meridian Circle ($d=190\text{mm}$, $f=2578\text{mm}$). The pavilion, the instrument, the way in which the observations were carried out and the treatment of the observational material have been described elsewhere (Sadžakov et al. 1976). For observations of the Sun we use a filter from high-quality glass.

The Sun's right ascension was deduced, as usual, from the trailing front and back edges and the declination from settings on the upper and lower edges.

Venus was observed like the Sun if full, or only

one of its edges, if phased. Mercury, owing to its scarce visibility, was observed mostly by bisection. In those cases when the seeing was satisfactory, the part of the planet illuminated by sunshine was observed. Venus and Mars were observed in the same way as the Sun, or only one edge. Whenever observing one edge only, the diameter correction was applied.

The ephemeris of the Sun, Mercury, Venus and Mars were calculated after 1989 and 1990. We obtained ephemeris from Institute of Theoretical Astronomy, in Sankt Petersburg.

The temperature inside the pavilion was read before and after the observation at two points, to the north and to the south of the instrument.

Table 1. Data on Observations

Object observ.	1989			1990		
	N	n	k	N	n	k
Sun	70	25	3	270	70	4
Mercury	32	11	3	79	20	4
Venus	52	19	3	255	67	4
Mars	27	8	3	113	31	4

Table 2. (O-C) Differences and their Errors for the Observed Objects

Objects	years	$(O - C)_\alpha$	ϵ_α	n	$(O - C)_\delta$	ϵ_δ	n
Sun	1989	+0 ^s .004	±0 ^s .031	25	-0 ^{''} .02	±0 ^{''} .26	25
	1990	+0 ^s .004	±0 ^s .029	70	+0 ^{''} .01	±0 ^{''} .28	70
Mercury	1989	+0 ^s .004	±0 ^s .035	11	+0 ^{''} .29	±0 ^{''} .49	11
	1990	+0 ^s .001	±0 ^s .029	20	+0 ^{''} .04	±0 ^{''} .24	20
Venus	1989	+0 ^s .001	±0 ^s .038	18	-0 ^{''} .15	±0 ^{''} .38	19
	1990	+0 ^s .000	±0 ^s .031	65	-0 ^{''} .02	±0 ^{''} .30	67
Mars	1989	-0 ^s .023	±0 ^s .032	8	-0 ^{''} .14	±0 ^{''} .38	8
	1990	-0 ^s .008	±0 ^s .031	31	+0 ^{''} .00	±0 ^{''} .34	31

The number of observations of the Sun and planets in the period 1989-1990 is presented in Table 1, where is

N - the number of reference stars-transits;

n - the number of observing tours;

k=N/n - the average number of reference stars - transits per observing tours.

The error of a single observation has been determined according to the formula

$$\epsilon_{(O-C)} = \pm \left[\frac{\sum \nu_i^2}{(n-1)} \right]^{1/2}$$

Mean annual differences $(O-C)_{\alpha,\delta}$ for the Sun and planets; $\epsilon_{(O-C)}$ - mean errors of single observations; n - the number of observations are summarized in Table 2.

The apparent right ascensions and declinations of the Sun, Mercury, Venus and Mars, as obtained on each particular day of observation, are compared with the ephemeris positions and given

in Tables 3,4,5 and 6. Tables 3-6 comprise eleven columns, where by

I column - date of observation;

II column - observers: 1 - S. Sadžakov, 2 - M. Dačić, 3 - Z. Cvetković; 4 - G. Damljanović

III column - mean temperature inside the pavilion;

IV column - atmospheric pressure in mm Hg;

V column - the number of the reference FK5 stars;

VI column - observed right ascensions (hours, minutes and seconds of time);

VII column - $(O - C)_\alpha$ of the right ascensions (time seconds);

VIII column - observed declinations (degrees, minutes and seconds of arc);

IX column - $(O - C)_\delta$ of the declinations (arc seconds);

X column - epoch of observation;

XI column - clamp position.

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Table 3. Data on the Sun observations

Date	observ	$t^{\circ}C$	Ba	n	R.A.	$(O-C)_{\alpha}$	DEC	$(O-C)_{\delta}$	E_p	clamp
1989.	01.0	10.0	738.1	1	22 49 15.078	.012	27 30 26.15	.04	9.01	W
07.03.	01,2,3	9.2	746.7	2	23 11 35.620	-.030	-5 11 46.24	.25	9.18	W
08.03.	1,2,3,4	12.7	738.3	2	23 15 17.580	-.048	-4 48 22.76	.02	9.18	W
16.03.	01,2,3	14.3	737.8	2	23 44 41.254	.010	-1 39 35.35	.15	9.21	W
23.03.	01,2,3	12.8	742.0	3	0 10 12.399	.011	01 06 15.44	.47	9.22	W
27.03.	02,3	12.9	747.7	4	0 24 45.437	.051	02 40 30.04	.10	9.24	W
29.03.	01,2,3	17.3	744.6	5	0 32 02.045	-.044	03 27 20.08	.05	9.24	W
31.03.	02,3	20.5	745.5	6	0 39 18.936	.000	04 13 54.96	.17	9.25	E
10.04.	02,3	19.5	743.3	2	1 15 52.596	-.034	08 01 19.56	.03	9.27	E
19.04.	01,2,3	14.8	743.0	2	1 49 09.015	.039	11 14 02.96	.17	9.30	E
10.05.	01,2	16.8	742.4	3	3 09 11.154	.037	17 40 26.69	.08	9.36	E
11.05.	01,2	21.2	740.8	4	3 13 05.862	-.017	17 55 56.47	.14	9.36	E
30.05.	01,2,3	20.6	741.6	7	4 29 08.489	.017	21 48 00.91	-.29	9.41	W
10.07.	02,3	29.2	745.5	2	7 18 40.176	.050	22 12 37.60	.03	9.52	W
11.07.	01,2,3	29.0	744.0	4	7 22 44.947	.029	22 04 46.37	.50	9.53	W
12.07.	01,2,3	28.2	743.3	3	7 26 49.253	.013	21 56 32.43	.09	9.53	W
20.07.	01,2,3	20.2	747.0	3	7 59 05.422	.014	20 37 28.65	.11	9.55	W
24.07.	02	24.8	747.1	5	8 15 00.421	.036	19 49 30.79	.17	9.56	W
14.08.	02	27.0	742.3	1	9 35 59.399	-.004	14 17 54.31	.20	9.62	W
15.08.	01,2	27.4	744.5	1	9 39 44.282	.030	13 59 15.20	.33	9.62	W
08/09.	01,2,3	17.9	743.0	2	11 07 33.511	-.055	05 36 56.33	.04	9.69	W
19/09.	01,3	23.9	747.4	3	11 47 01.241	.018	01 24 15.83	.32	9.72	W
20/09.	02,3	23.9	749.0	6	11 50 36.391	-.011	01 00 58.68	.26	9.72	W
21/09.	02,3	23.7	749.7	6	11 54 11.628	.012	00 37 39.69	.40	9.72	W
22/09.	02,3	21.9	746.8	4	11 57 46.970	-.039	00 14 19.22	.57	9.73	W
1990.	01.0	19.2	742.4	0	20 26 04.343	.016	-19 12 53.90	.04	0.07	W
24.01.	02,3,4	9.2	742.4	4	20 26 04.343	.016	-19 12 53.90	.04	0.07	W
05.02.	02,3,4	8.1	754.5	3	21 15 20.464	.042	-15 55 54.18	.03	0.10	W
06.02.	02,3,4	9.1	750.8	3	21 19 21.408	.075	-15 37 33.37	.11	0.10	W
07.02.	02,3,4	7.4	750.8	3	21 23 21.533	.037	-15 18 56.68	.05	0.10	W
08.02.	02,3,4	8.0	748.7	4	21 27 20.847	-.014	-15 00 04.50	-.04	0.11	W
22.03.	01,3	18.5	746.7	3	0 05 41.025	-.017	00 36 51.65	.31	0.22	W
02.04.	02,3,4	17.5	744.0	3	0 45 44.343	-.012	04 54 43.00	.18	0.25	W
03.04.	02,4	19.0	739.5	-	0 49 23.139	-.004	05 17 44.45	.10	0.25	W
10.05.	01,2,3	20.8	742.8	1	3 08 14.895	.006	17 36 37.93	.19	0.36	W
16.05.	02,3,4	22.4	744.5	1	3 31 50.399	-.011	19 05 25.98	.07	0.37	W
17.05.	02,3,4	22.0	743.1	1	3 35 48.355	-.006	19 19 08.00	.21	0.38	W
22.05.	02,3,4	20.4	742.2	2	3 55 46.719	-.019	20 22 38.33	.38	0.39	W
12.06.	02,3,4	19.2	742.2	2	5 21 43.745	-.020	23 08 58.65	.33	0.45	W
18.06.	02,3,4	19.8	743.1	2	5 46 39.870	-.005	23 24 21.31	.50	0.46	W
19.06.	01,2,4	23.4	744.0	3	5 50 49.596	-.020	23 25 28.38	-.09	0.47	W
20.06.	02,3,4	25.2	744.5	4	5 54 59.366	.044	23 26 10.60	-.24	0.47	W
21.06.	02,3,4	28.1	740.3	4	5 59 09.151	-.022	23 26 27.96	.35	0.47	W
25.06.	02,3,4	22.5	747.9	4	6 15 47.808	.051	23 23 29.24	.46	0.48	W

Table 3. (continued)

Date	observ.	$t^{\circ}\text{C}$	Ba	n	R.A.	$(O - C)_{\alpha}$	DEC	$(O - C)_{\delta}$	E_p	clamp
26.06.	1,2,3	22.6	746.8	3	6 19 57.197	-.012	23 21 42.66	-.37	0.48	W
27.06.	2,3,4	23.8	744.9	3	6 24 06.419	-.036	23 19 31.42	.50	0.49	W
28.06.	2,3,4	26.1	744.1	3	6 28 15.453	-.035	23 16 55.58	-.24	0.49	W
29.06.	2,3,4	27.0	745.3	3	6 32 24.276	-.004	23 13 55.22	-.53	0.49	W
02.07.	2,4	25.1	741.0	3	6 44 49.270	.043	23 02 27.99	.11	0.50	W
05.07.	1,2,3	20.5	740.8	2	6 57 11.640	-.013	22 47 23.89	-.13	0.51	W
06.07.	2,4	24.4	738.4	3	7 01 18.427	-.004	22 41 34.92	.07	0.51	W
16.07.	2	23.8	747.3	3	7 42 03.878	.016	21 22 13.63	-.25	0.54	E
17.07.	1,2	26.1	745.2	2	7 46 05.907	.009	21 12 13.99	-.03	0.54	E
26.07.	2,3,4	21.2	742.6	2	8 21 59.643	-.005	19 26 33.60	.07	0.57	E
27.07.	2,3,4	23.9	742.5	-	8 25 55.988	-.018	19 13 09.13	.08	0.57	E
30.07.	2,3,4	27.6	745.9	9	8 37 41.304	.003	18 31 02.96	.10	0.58	E
31.07.	2,3,4	29.2	745.0	7	8 41 35.165	-.010	18 16 24.27	.37	0.58	E
01.08.	2,3,4	27.8	745.4	4	8 45 28.402	-.018	18 01 27.74	-.73	0.58	E
02.08.	1,2,4	28.2	746.2	5	8 49 21.018	.016	17 46 13.67	-.02	0.59	E
03.08.	2,4	25.5	747.1	3	8 53 13.013	.010	17 30 42.33	-.32	0.59	E
06.08.	2,4	28.1	742.3	7	9 04 45.313	.018	16 42 27.63	.42	0.60	E
07.08.	2,4	26.9	741.9	5	9 08 34.870	.022	16 25 50.09	-.31	0.60	E
14.08.	1,2,4	26.3	743.8	8	9 35 05.773	-.053	14 22 18.38	.39	0.62	E
15.08.	1,2,4	27.4	741.4	5	9 38 50.888	-.038	14 03 41.75	-.16	0.62	E
16.08.	1,2,4	27.0	743.4	6	9 42 35.489	-.006	13 44 51.61	.19	0.62	E
17.08.	2,4	28.5	742.8	3	9 46 19.581	.032	13 25 48.30	.35	0.63	E
20.08.	2,4	24.2	745.4	5	9 57 28.866	.030	12 27 22.79	.28	0.64	W
21.08.	1,2,4	26.2	739.8	5	10 01 10.987	.051	12 07 30.22	-.30	0.64	W
23.08.	1,2	21.7	746.4	3	10 08 33.825	-.026	11 27 11.00	-.08	0.64	W
24.08.	2,4	22.0	747.4	5	10 12 14.566	-.012	11 06 45.02	-.32	0.65	W
27.08.	2,3,4	25.5	742.4	4	10 23 14.229	-.043	10 04 25.62	.15	0.65	W
28.08.	1,2,3	25.2	745.2	5	10 26 53.310	.027	9 43 19.77	-.03	0.66	W
29.08.	1,2,3	24.3	746.4	4	10 30 32.012	-.022	9 22 04.76	.09	0.66	W
30.08.	1,2,3	25.1	744.0	7	10 34 10.350	.011	9 00 40.93	.09	0.66	W
31.08.	2,3,4	26.7	742.2	7	10 37 48.340	-.048	8 39 08.60	.38	0.67	W
10.09.	2,3	19.3	745.2	2	11 13 53.346	.011	4 57 04.01	-.05	0.69	E
19.09.	1,2,3	15.2	743.9	2	11 46 10.765	-.014	1 29 42.40	-.23	0.72	E
01.10.	2,3,4	22.2	742.8	5	12 29 21.616	.019	-3 10 21.27	-.09	0.75	E
04.10.	2,3	18.2	743.8	5	12 40 14.096	.021	-4 19 57.63	-.47	0.76	E
11.10.	1,2,3	17.0	749.7	6	13 05 49.884	-.017	-7 00 19.38	.23	0.78	E
12.10.	1,2,3	20.3	750.2	6	13 09 31.134	.059	-7 22 54.73	.35	0.78	E
15.10.	2,3	18.1	748.5	4	13 20 38.063	-.003	-8 30 03.52	.14	0.79	E
16.10.	1,2,3	18.3	747.6	7	13 24 21.490	-.017	-8 52 12.69	-.48	0.79	E
17.10.	2,3	16.9	745.5	7	13 28 05.502	.011	-9 14 14.33	.07	0.79	E
19.10.	1,2,3	17.6	741.7	4	13 35 35.342	.028	-9 57 53.38	.44	0.80	E
22.10.	2,3	8.5	750.0	4	13 46 54.849	.060	-11 02 15.36	.21	0.81	E
23.10.	1,2	7.8	752.5	4	13 50 42.668	.001	-11 23 23.30	.16	0.81	E
24.10.	1,2,3	9.1	746.9	5	13 54 31.164	.077	-11 44 20.89	-.18	0.81	E
25.10.	1,2,3	10.3	744.0	4	13 58 20.350	.030	-12 05 07.70	-.18	0.82	E
01.11.	1,2,3	21.3	734.2	4	14 25 24.947	.007	-14 25 00.25	-.09	0.84	E

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Table 3. (continued)

Date	observ.	t°C	Ba	n	R.A.	(O - C) _α	DEC	(O - C) _δ	E _p	clamp
20.11.	1,2,3	11.1	736.4	1	15 42 17.558	.016	-19 40 56.38	.06	0.89	E
22.11.	1,2,3	17.3	741.6	4	15 50 40.811	.055	-20 07 28.20	.49	0.89	E
04.12.	2,3	1.5	744.0	3	16 42 01.674	-.013	-22 14 04.20	.26	0.93	E
21.12.	2,3	2.5	747.2	4	17 56 56.614	-.048	-23 26 31.35	.18	0.97	E
24.12.	2,3	1.9	753.2	4	18 10 16.228	.000	-23 25 22.20	.16	0.98	E
25.12.	1,2,3	1.9	750.7	4	18 14 42.680	-.010	-23 24 02.63	.34	0.98	E

Table 4. Data on the Mercury observations

Date	observ.	t°C	Ba	n	R.A.	(O - C) _α	DEC	(O - C) _δ	E _p	clamp
1989.										1980+
07.03.	1,2	7.6	746.7	2	21 51 21.032	.022	-14 58 42.94	.58	9.18	W
08.03.	2	11.1	738.3	2	21 57 15.467	.056	-14 32 12.73	.20	9.18	W
16.03.	1,3	12.9	737.8	3	22 46 06.528	.026	-10 15 04.73	.39	9.21	W
27.03.	2	12.3	747.7	4	23 58 04.395	-.028	-2 16 26.27	.38	9.24	W
29.03.	2,3	17.2	744.6	5	0 11 53.536	-.023	-0 35 17.03	.43	9.24	W
31.03.	2,3	19.8	745.5	6	0 25 58.679	-.003	0 09 32.10	.37	9.25	E
10.04.	2,3	19.9	743.3	2	1 40 15.920	.009	10 24 10.97	.46	9.27	E
30.05.	1,2	20.1	741.6	-	3 51 28.048	-.072	16 59 08.28	.66	9.41	W
10.07.	2,3	28.0	745.5	2	6 38 25.704	.034	23 41 10.82	.98	9.52	W
11.07.	2,3	28.2	744.0	4	6 47 37.475	.009	23 41 46.93	.57	9.53	W
24.07.	2	25.0	747.1	5	8 45 27.626	.011	19 53 09.07	.62	9.56	W
1990.										1990+
02.04.	2	18.4	744.0	3	1 37 42.660	.012	11 13 33.86	.36	0.25	W
03.04.	2	20.0	739.5	4	1 44 19.858	.044	12 03 35.91	.10	0.25	W
19.06.	2,4	23.0	744.0	3	4 45 36.185	.063	21 23 39.92	.09	0.47	W
20.06.	2,3,4	24.2	744.5	4	4 53 41.004	.009	21 48 54.18	.24	0.47	W
21.06.	2	27.1	740.3	4	5 01 59.273	.035	22 12 52.70	.21	0.47	W
25.06.	2,4	22.2	747.9	4	5 37 14.440	.034	23 32 06.80	.22	0.48	W
26.06.	2,4	22.1	746.8	3	5 46 29.094	.031	23 46 46.59	.31	0.48	W
27.06.	2,3,4	24.0	744.9	3	5 55 51.606	.014	23 59 01.71	.15	0.49	W
28.06.	2,4	25.8	744.1	3	6 05 20.455	-.037	24 08 43.56	.13	0.49	W
05.07.	1,3	21.1	740.8	2	7 12 18.322	.025	23 59 10.82	.20	0.50	W
06.07.	2,4	24.9	738.4	3	7 21 38.026	.033	23 46 50.37	.22	0.51	W
17.07.	2	27.1	745.2	2	8 53 33.853	.004	19 14 44.76	.28	0.54	E
30.07.	3	28.1	745.9	9	10 14 33.158	-.003	11 14 21.31	.28	0.57	E
14.08.	2	27.2	748.8	8	11 14 39.801	.016	2 26 19.48	.20	0.62	E
21.08.	1,2	27.2	739.8	5	11 28 09.077	-.006	0 20 00.73	.06	0.64	W
03.10.	3	16.4	747.5	3	11 48 22.562	.046	1 3 19 35.66	.16	0.76	E
04.10.	3	17.4	743.8	5	11 54 37.330	-.012	2 40 01.57	.49	0.76	E
11.10.	2	16.3	749.7	6	12 39 17.244	.016	2 23 40.57	.11	0.78	E
12.10.	3	20.0	750.2	6	12 45 40.453	.015	3 08 45.19	.11	0.78	E
04.12.	2	1.2	744.0	3	18 13 09.153	.001	-25 41 48.94	.36	0.93	E

Table 5. Data on the Venus observations

Date	observ.	$t^{\circ}\text{C}$	Ba	n	R.A.	$(O - C)_{\alpha}$	DEC	$(O - C)_{\delta}$	E_p	clamp
1989.										1980+
01.03.	1,2	10.0	738.1	1	22 18 28.634	-.013	-11 56 03.69	-.66	9.01	W
07.03.	1,2	8.6	746.7	2	22 46 56.095	.039	-9 14 33.40	-.27	9.18	W
08.03.	2,4	12.0	738.3	2	22 51 37.602	.004	-8 46 42.34	.31	9.18	W
16.03.	1,3	14.1	737.8	-	23 28 43.898	-.045	-4 56 34.15	-.68	9.21	W
23.03.	1,2,3	12.7	742.0	3	0 00 44.757	-.009	-1 27 57.90	.34	9.22	W
27.03.	2,3	12.5	747.7	4	0 18 56.804	.047	0 32 36.25	.15	9.24	W
29.03.	1,2,3	18.1	744.6	5	0 28 02.441	-.045	1 32 57.27	-.08	9.24	W
10.04.	2,3	19.8	743.3	2	1 22 51.736	.000	7 29 52.02	-.57	9.27	E
19.04.	1,2,3	14.8	743.0	2	2 04 44.026	-.057	11 42 48.10	.27	9.30	E
10.05.	2	17.5	742.4	3	3 47 16.272	.038	19 49 42.87	-.39	9.36	E
11.05.	2	21.3	740.8	-	3 52 21.261	.034	20 07 53.81	-.28	9.36	E
30.05.	1,2	21.1	741.6	-	5 31 55.324	.070	23 58 28.43	-.33	9.41	W
10.07.	2	29.3	745.5	2	9 06 19.977	-.040	18 18 05.87	-.35	9.52	W
11.07.	2	29.7	744.0	4	9 11 12.961	.034	17 56 56.52	.38	9.53	W
12.07.	2	28.4	743.3	3	9 16 04.617	-.020	17 35 18.58	.52	9.53	W
19.09.	3	24.3	747.4	3	14 21 41.489	.000	-15 17 19.00	-.31	9.72	W
20.09.	2	24.6	749.0	6	14 26 08.923	-.013	-15 43 23.34	-.34	9.72	W
21.09.	3	24.1	749.7	6	14 30 37.114	.016	-16 09 07.42	-.61	9.72	W
22.09.	3	21.4	746.8	4	14 35 06.078	-.046	-16 34 30.56	.09	9.73	W
1990.										1990+
24.01.	2,4	8.8	742.4	4	19 43 59.757	-.047	-14 14 48.52	.03	0.07	W
05.02.	2	6.0	754.5	3	19 26 35.465	-.010	-14 31 01.75	.75	0.10	W
06.02.	2	7.1	750.8	3	19 26 11.911	.045	-14 34 13.17	.19	0.10	W
07.02.	2	5.7	750.8	3	19 25 58.635	.033	-14 37 33.71	-.54	0.10	W
08.02.	2	5.2	748.7	4	19 25 55.556	-.054	-14 41 01.53	-.35	0.11	W
21.03.	2,4	12.3	748.9	4	21 04 06.524	.044	-14 08 26.44	.50	0.22	W
22.03.	2,4	15.6	746.7	3	21 07 53.049	-.037	-13 59 17.93	.10	0.22	W
23.03.	2,4	17.0	743.1	3	21 11 41.261	-.043	-13 49 41.00	-.07	0.22	W
02.04.	2,4	13.1	744.0	3	21 50 55.121	.011	-11 48 11.80	.36	0.25	W
03.04.	2,4	15.9	739.5	-	21 54 55.945	.017	-11 33 36.61	-.24	0.25	W
10.05.	2,4	18.7	742.8	1	0 28 03.493	.016	1 16 11.26	-.16	0.36	W
16.05.	2	19.1	744.5	1	0 53 30.458	.022	3 45 05.67	.12	0.37	W
17.05.	2,4	20.8	743.1	1	0 57 46.553	-.052	4 10 02.02	-.02	0.38	W
22.05.	3	17.6	742.2	2	1 19 15.153	-.028	6 14 34.30	.09	0.39	W
01.06.	2	15.1	745.6	1	2 03 01.454	-.045	10 18 16.58	.15	0.42	W
18.06.	2	19.1	743.1	2	3 20 51.972	-.010	16 28 25.84	.64	0.46	W
19.06.	2,4	21.6	744.0	3	3 25 36.405	-.051	16 47 30.39	.19	0.47	W
20.06.	2,4	23.7	744.5	4	3 30 21.982	.007	17 06 12.50	-.20	0.47	W
21.06.	2	25.9	740.3	4	3 35 08.701	-.015	17 24 31.50	.62	0.47	W
25.06.	2	20.5	747.9	4	3 54 26.894	.021	18 33 42.61	-.07	0.48	W
26.06.	2	20.4	746.8	3	3 59 19.237	.015	18 49 55.80	-.28	0.48	W
27.06.	3	21.9	744.9	3	4 04 12.685	-.030	19 05 41.84	.56	0.49	W
28.06.	2	24.3	744.1	3	4 09 07.230	-.002	19 21 00.10	.04	0.49	W
29.06.	3	24.7	745.3	3	4 14 02.864	-.030	19 35 49.97	-.16	0.49	W

RESULTS OF OBSERVATIONS OF THE SUN, MERCURY, VENUS AND MARS FROM BELGRADE

Table 5. (continued)

Date	observ.	t°C	Ba	n	R.A.	(O - C) _α	DEC	(O - C) _δ	E _p	clamp
02.07.	2	22.7	741.0	3	4 28 56.195	-.026	20 17 23.20	.02	0.50	W
05.07.	3	19.1	740.8	2	4 43 58.848	.032	20 54 19.70	.22	0.51	W
06.07.	2	22.9	738.4	3	4 49 01.713	.031	21 05 34.43	.36	0.51	W
16.07.	2	22.0	747.3	3	5 40 17.499	.022	22 26 28.89	.44	0.54	W
17.07.	2	24.3	745.2	2	5 45 29.016	.002	22 31 15.34	.18	0.54	W
26.07.	2	19.2	742.6	2	6 32 30.973	.001	22 45 32.27	.61	0.57	W
27.07.	2	21.7	742.5	2	6 37 45.585	.035	22 43 53.02	.15	0.57	W
30.07.	2	26.5	745.9	9	6 53 29.371	.038	22 34 59.95	.03	0.58	W
31.07.	2	27.4	745.0	7	6 58 43.785	.021	22 30 43.91	.62	0.58	W
01.08.	2	27.1	745.4	4	7 03 58.027	.044	22 25 48.78	.59	0.58	W
02.08.	2	25.7	746.2	5	7 09 12.049	.000	22 20 14.69	.04	0.59	W
03.08.	2	23.6	747.1	3	7 14 25.802	-.015	22 14 01.76	.35	0.59	W
06.08.	2	26.3	742.3	7	7 30 04.992	.010	21 51 31.53	.21	0.60	W
07.08.	2,4	25.1	741.9	5	7 35 17.219	.022	21 42 44.95	.04	0.60	W
14.08.	2	25.4	743.8	8	8 11 27.150	.019	20 23 55.16	.08	0.62	W
15.08.	2	25.7	741.4	5	8 16 34.494	.041	20 10 14.53	.19	0.62	W
16.08.	2	25.1	743.4	6	8 21 41.080	.044	19 55 58.91	.16	0.62	W
20.08.	2	23.1	745.4	5	8 41 59.257	-.011	18 53 16.35	.14	0.64	W
21.08.	2	24.7	739.8	5	8 47 01.637	-.044	18 36 13.24	.10	0.64	W
23.08.	2	20.1	746.4	3	8 57 03.676	.025	18 00 31.87	.11	0.64	W
24.08.	2	20.9	747.4	5	9 02 03.311	-.043	17 41 54.74	.01	0.65	W
27.08.	2	24.6	742.4	4	9 16 56.586	-.005	16 43 04.69	.07	0.65	W
28.08.	3	24.5	745.2	5	9 21 52.454	-.002	16 22 30.49	-.03	0.66	W
29.08.	2	23.4	746.4	4	9 26 47.374	-.007	16 01 28.59	.37	0.66	W
30.08.	3	24.3	744.0	7	9 31 41.348	.046	15 39 59.61	.30	0.66	W
31.08.	2	25.8	742.2	7	9 36 34.380	.005	15 18 04.20	.15	0.67	W
10.09.	3	18.9	745.2	2	10 24 35.347	.000	11 17 00.11	.12	0.69	W
19.09.	2	14.9	743.9	2	11 06 42.800	.008	7 12 34.74	.05	0.72	W
03.10.	3	17.0	747.5	3	12 11 00.723	.000	0 21 57.07	.29	0.76	W
04.10.	3	17.7	743.8	5	12 15 35.007	.038	-0 08 04.07	.46	0.76	W
11.10.	2	16.4	749.7	6	12 47 38.839	-.021	-3 38 18.48	.06	0.78	W
12.10.	3	19.6	750.2	6	12 52 14.722	.043	-4 08 12.51	.55	0.78	W
15.10.	2	18.0	748.5	4	13 06 04.821	.022	-5 37 25.71	.02	0.79	W
16.10.	2	17.8	747.6	7	13 10 42.470	.052	-6 06 57.90	.23	0.79	W
17.10.	2	16.9	745.5	7	13 15 20.661	.014	-6 36 22.69	.04	0.79	W
23.10.	2	7.8	752.5	4	13 43 23.267	.042	-9 29 32.52	.11	0.81	W
24.10.	1,2,3	9.1	746.9	5	13 48 06.277	.014	-9 57 43.66	.12	0.81	W
25.10.	1,2,3	10.2	744.0	4	13 52 50.114	.023	-10 25 41.12	.37	0.82	W
20.11.	2	11.7	736.4	1	16 02 05.578	-.007	-20 29 08.63	.47	0.89	W
22.11.	3	17.5	741.6	4	16 12 35.546	.054	-21 02 09.46	.03	0.89	W
04.12.	2	1.5	744.0	3	17 17 00.823	-.057	-23 26 40.43	.11	0.93	W
21.12.	2	2.5	747.2	4	18 50 28.478	.008	-23 55 38.16	.28	0.97	W
24.12.	2	2.8	753.2	4	19 06 54.473	-.021	-23 38 24.43	.08	0.98	W

Table 6. Data on the Mars observations

Date	observ.	$t^{\circ}\text{C}$	Ba	n	R.A.	$(O - C)_{\alpha}$	DEC	$(O - C)_{\delta}$	E_p	clamp
1989.										1980+
23.03.	2	13.6	742.0	3	4 21 45.994	-.060	22 52 47.53	-.55	9.22	W
27.03.	2	14.7	747.7	4	4 32 16.279	.026	23 16 23.47	-.53	9.24	W
29.03.	2	20.8	744.6	5	4 37 33.153	.024	23 27 14.41	-.35	9.24	W
31.03.	2	21.8	745.5	6	4 42 51.119	-.025	23 37 26.70	.05	9.25	E
10.05.	2	18.7	742.4	3	6 31 00.251	-.025	24 36 45.10	-.13	9.36	E
30.05.	2	21.9	741.6	-	7 24 55.664	-.030	23 20 52.35	.26	9.41	W
10.07.	2	29.4	745.5	2	9 11 00.192	-.052	17 30 45.82	-.37	9.52	W
11.07.	2	29.7	744.0	4	9 13 29.919	-.044	17 19 27.42	.50	9.53	W
1990.										1990+
02.04.	2,4	12.2	744.0	3	21 15 40.000	.018	-17 09 44.72	.09	0.25	W
03.04.	1,2,4	14.3	739.5	-	21 18 39.429	-.056	-16 57 01.73	.36	0.25	W
10.05.	2	16.8	742.8	1	23 05 18.258	-.031	-7 40 08.78	-.31	0.36	W
16.05.	2	17.7	744.5	1	23 21 56.064	-.012	-5 59 28.74	-.26	0.37	W
17.05.	2	18.3	743.1	1	23 24 41.481	.034	-5 42 34.17	-.15	0.38	W
22.05.	2	15.6	742.2	2	23 38 24.903	.021	-4 17 39.11	-.21	0.39	W
01.06.	2	13.0	745.6	1	0 05 34.131	.050	-1 27 13.94	.07	0.42	W
12.06.	2	15.5	742.2	2	0 35 02.763	.053	1 38 21.87	-.42	0.45	W
18.06.	2	15.7	743.1	2	0 50 58.664	-.015	3 17 33.03	.24	0.46	W
19.06.	2	19.0	744.0	3	0 53 37.381	-.019	3 33 52.80	.20	0.47	W
20.06.	2	20.6	744.5	4	0 56 15.923	-.045	3 50 08.66	.00	0.47	W
21.06.	2	22.4	740.3	4	0 58 54.283	-.023	4 06 20.44	-.60	0.47	W
25.06.	2	17.9	747.9	4	1 09 25.810	-.001	5 10 23.28	.33	0.48	W
26.06.	2	16.9	746.8	3	1 12 03.193	-.020	5 26 12.14	-.58	0.48	W
28.06.	2	20.3	744.1	3	1 17 17.356	.007	5 57 34.72	.09	0.49	W
29.06.	2	22.3	745.3	3	1 19 54.140	.006	6 13 08.21	-.21	0.49	W
17.07.	2	19.5	745.2	2	2 06 20.635	.003	10 36 02.55	-.53	0.54	E
26.07.	2	15.4	742.6	2	2 29 00.806	.009	12 33 00.37	.64	0.57	E
30.07.	2	22.0	745.9	9	2 38 55.204	-.027	13 21 26.07	.22	0.58	E
31.07.	2	22.2	745.0	7	2 41 22.713	-.035	13 33 11.40	.62	0.58	E
01.08.	2	21.5	745.4	4	2 43 49.762	-.013	13 44 48.22	.04	0.58	E
02.08.	2	20.9	746.2	5	2 46 16.339	-.040	13 56 16.48	-.06	0.59	E
03.08.	2	18.5	747.1	3	2 48 42.430	-.011	14 07 36.15	.32	0.59	E
06.08.	2	20.8	742.3	7	2 55 57.638	-.031	14 40 43.14	.12	0.60	E
16.08.	2	20.3	743.4	6	3 19 29.526	-.017	16 21 30.76	.36	0.62	E
17.08.	2	21.8	742.8	3	3 21 46.828	-.042	16 30 46.09	.43	0.63	E
20.08.	2	16.2	745.4	5	3 28 33.666	.033	16 57 37.80	-.21	0.64	W
21.08.	2	21.2	739.8	5	3 30 47.492	.016	17 06 17.00	.18	0.64	W
29.08.	1	17.9	746.4	4	3 48 02.206	-.047	18 10 13.35	-.60	0.66	W
30.08.	1	19.0	744.0	7	3 50 06.657	.048	18 17 34.28	.02	0.66	W
31.08.	1	21.2	742.2	7	3 52 09.924	-.051	18 24 46.88	-.17	0.67	W

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РЕЗУЛТАТИ ПОСМАТРАЊА СУНЦА, МЕРКУРА, ВЕНЕРЕ И МАРСА У БЕОГРАДУ

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Претходно саопштење

У овом раду представљени су резултати $(O - C)_\alpha$ и $(O - C)_\delta$ добијени у периоду од 1989. до

1990. у Београду из дневних посматрања Сунца, Меркура, Венере и Марса на Великом меридијанском кругу "ASKANIA" $d=190$ mm, $f=2578$ mm.