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No 141

BEOGRAD
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IN MEMORIAM

VASILIJE OSKANJAN
(1921–1989)

The sudden death of Dr. Vasilije Oskanjan, the former director of the Belgrade Astronomical Observatory and the editor–in–chief of its editions, distressed many of his collaborators, colleagues and friends in Belgrade. He died on February 11th 1989 in Erevan, in the Soviet Union, as a collaborator in the Federal Science Institute for Radiophysics, were he was living from 1966, after he and his family had moved from Yugoslavia. All the years before 1966 he had spent in Belgrade where he was the pioneer in the development of astrophysical research at the Observatory and a very respected professor of astrophysics at the Faculty of Sciences.

Vasilije Oskanjan was Armenian by origin, but he was born in Valjevo (Serbia) in 1921 where his parents had met after the tragic events in Armenia in 1914–1916 – brutal tormed by Turks. Later, he and his family moved to Belgrade where Vasilije Oskanjan got his education. He began to work in the Observatory in Belgrade even before he finished his studies. In 1950, he graduated in astronomy at the Faculty of Sciences.

From the very beginning of his work he was deeply interested in astrophysics, which was quite understandable, since at that time, astrophysics had a tempesteous start in development in the world. He started to follow the activity of the Sun, observing the sunspots and protuberances, and continued with photometry of variable stars.

In 1960 Vasilije Oskanjan founded Research group for astrophysics at the Belgrade Observatory and became its leader. The first step of the Group was the organization of an expedition for the observation of the total solar eclipse at Hvar on February 15th 1961. Later, he mostly devoted himself to the research of eruptive stars, mainly to photometry and polarimetry of UV Ceti type stars. At that time the working conditions were very modest – old and inconvenient instruments and bad astroclimate conditions. All those difficulties were overcomed by modernization of some instruments and by the right choice of convenient programs. Some solutions in the construction of the polarimeter were highly estimated by the circles of experts. His prolific work at the Observatory in Belgrade as well as at the Byurakan Observatory during 1958 was crowened with the defense of PhD thesis „The UV Ceti Variable Stars" at the Faculty of Sciences of Belgrade University in 1960.

In the same year Vasilije Oskanjan became the director of the Astronomical Observatory in Belgrade, having already been the vice–director for a year. Being on that position he contributed a lot to a more intensive collaboration of the Observatory with the world and its faster development. He occupied that position till 1964 when he was elected a docent of astrophysics in the Department of astronomy at The Faculty of Sciences. Soon, he became a very respected and beloved professor among both his colleagues and students. His high level of culture, his nonconventional behaviour and simplicity were fully expressed.

He attained an exceptional success in popularizing astronomy. His talent of understanding the essence of things and simple presentation of the most complex problems was famous. He was also very eloquent and always ready to talk about any topics.

All those activities in which Vasilije Oskanjan was successfully engaged in Belgrade were interrupted when he moved to his ancestor land, Armenia. After he had come there he got employment at the Byurakan Observatory, one of well–known astrophysical observatories in the world. There, he continued his research work on eruptive stars. He kept on maintaining very close relations with the colleagues from the Belgrade Observatory and tried to make possible their collaboration with the Byurakan Observatory. In 1986 he was appointed a manager of the Department of photometry in the Federal Science Institut of Radiophysics in the Soviet Union.

During the period of 18 years, from 1948 to 1966, which Vasilije Oskanjan spent in the Astronomical Observatory in Belgrade, he laid the foundation of astrophysics which enabled the continuing rise of that science in our country. His contribution to our science has a permanent value. The years of his work in the Observatory have not been remembered only for his indisputable scientific results but also for his cheerful spirit he radiated with, his frankness for cooperation with anyone who wanted to, and for his human understanding of people's everyday relations.

Jelisaveta Arsenijević

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UDC 524.38–323
Original scientific paper

CHARACTERISTICS OF THE BELGRADE DOUBLE STAR CATALOGUE

S. Sadžakov, M. Dačić, Z. Cvetković, Z. Ćatović

Astronomical Observatory, Beograd, Volgina 7, Yugoslavia

(Received: October 26, 1989)

SUMMARY: The results of the comparison of the Belgrade Catalogue to a few others, as wel as the systematic errors of the types $\Delta\alpha$, $\Delta\delta$, are presented.

1. INTRODUCTION

In order to obtain an insight into the quality of the Double Star Catalogue (Sadžakov et al., 1990), which has been compiled in Belgrade, we should examine both the internal and the external accuracies. In the present contribution preliminary results of the systematic error determination obtained from comparisons with three other catalogues (Chernega et al., 1987), (Tauber, 1986) and AGK3 are presented. These results will be guidelines in our further examinations.

2. THE SYSTEMATIC ERRORS AND THEIR CHARACTERISTICS

At first we form the differences:

$\Delta\alpha = \alpha_{BGD} - \alpha_{CAT}$ BGD – Belgrade
$\Delta\delta = \delta_{BGD} - \delta_{CAT}$ CAT – Kiev, Moskow, AGK3

All star positions in the catalogues are reduced to the same epoch (in our case to that of the Belgrade Double Star Catalogue) by using the AGK3 proper motions. The accuracies of the star positions given in the catalogues are strictly taken into account. The weights ($p = 1/\epsilon$) are calculated on the basis of the root–mean–square error of a catalogue position.

The obtained differences are averaged within groups of 4 hours and zones of 20° according to the star distribution in the course of observations. All differences ($\Delta\alpha$, $\Delta\delta$) exceeding 2.5ϵ are rejected; their fraction is 5%.

It is well known that within the differences ($\Delta\alpha$, $\Delta\delta$) various possible systematic influences are contained and they can be represented as:

$$\Delta\alpha = \Delta\alpha_o + \Delta\alpha_\delta + \Delta\alpha_\alpha + \Delta\alpha_m + \Delta\alpha_{sp}$$
$$\Delta\delta = \Delta\delta_o + \Delta\delta_\delta + \Delta\delta_\alpha + \Delta\delta_m + \Delta\delta_{sp}$$

where the subscripts indicate the arguments of which the systematic influences are dependent.

The systematic influences ($\Delta\alpha_o + \Delta\alpha_\delta$), i.e. ($\Delta\delta_o + \Delta\delta_\delta$) are first to be pointed out by using the classical method and then we calculate $\Delta\alpha_\alpha$, $\Delta\delta_\alpha$, $\Delta\alpha_m$, $\Delta\delta_m$, $\Delta\alpha_{sp}$, $\Delta\delta_{sp}$.

Table 1. Systematic differences $\Delta\alpha_\delta$ in 0^s001 unit

	Kiev			AGK3		
zone	Δ	ε	N	Δ	ε	N
δ <20°	-1	±79	173	3	±43	266
20° -40°	-1	±64	345	3	±40	180
δ >40°	-7	±77	417	3	±40	220

Table 2. Systematic differences $\Delta\delta_\delta$ in 0".01 unit

	Kiev			AGK3			Moskow		
zone	Δ	ε	N	Δ	ε	N	Δ	ε	N
δ <20°	13	±80	173	9	±64	320	-26	±65	20
20° -40°	12	±88	345	9	±64	197	23	±62	91
δ >40°	- 7	±89	417	-1	±63	243	- 9	±66	171

Table 3. Systematic differences $\Delta\alpha_\alpha$ in 0^s.001 unit

	Kiev			AGK3		
α	Δ	ε	N	Δ	ε	N
0^h - 4^h	-17	±72	168	- 5	±41	105
4 - 8	- 9	±71	193	- 5	±41	165
8 -12	12	±80	94	- 0	±46	73
12 -16	- 1	±55	82	2	±41	54
16 -20	9	±75	180	2	±39	123
20 -24	9	±74	218	7	±38	146

Table 4. Systematic differences $\Delta\delta_\alpha$ in 0".01 unit

	Kiev			AGK3			Moskow		
α	Δ	ε	N	Δ	ε	N	Δ	ε	N
0^h - 4^h	15	±104	168	12	±73	116	8	±59	46
4 - 8	12	± 83	193	11	±64	182	1	±59	46
8 -12	-12	± 79	94	- 2	±59	82	0	±66	50
12 -16	-14	± 78	82	-10	±61	65	-7	±67	40
16 -20	- 4	± 85	180	-11	±64	153	-8	±71	48
20 -24	- 8	± 81	218	- 5	±54	162	5	±66	52

Table 5. Systematic differences $\Delta\alpha_m$ in 0^s.001 unit

	Kiev			AGK3		
magnitude	Δ	ε	N	Δ	ε	N
m <6.5	18	±67	42			
6.5-7.0	- 9	±44	75	-3	±41	113
7.0-7.5	- 7	±52	111	-2	±40	88
7.5-8.0	1	±68	132	-1	±40	112
8.0-8.5	0	±66	243	7	±40	157
8.5-9.0	1	±88	332	-3	±41	196

Table 6. Systematic differences $\Delta\delta_m$ in 0".01 unit

	Kiev			AGK3			Moskow		
magnitude	Δ	ϵ	N	Δ	ϵ	N	Δ	ϵ	N
m <6.5	- 2	±69	42						
6.5-7.0	- 3	±72	75	5	±67	120			
7.0-7.5	13	±69	111	2	±59	108	-6	±62	81
7.5-8.0	- 8	±83	132	-14	±60	122			
8.0-8.5	0	±84	243	0	±63	185	1	±62	131
8.5-9.0	0	±98	332	4	±63	225	4	±70	65

Table 7. Systematic differences $\Delta\alpha_{sp}$ in 0^s.001 unit

	Kiev			AGK3		
spectar	Δ	ϵ	N	Δ	ϵ	N
O,B,A	2	± 65	357	4	±29	291
F	0	± 65	258	2	±30	192
G	9	±111	133	-7	±39	101
K,M,N	-10	± 50	115	-9	±42	80

Table 8. Systematic differences $\Delta\delta_{sp}$ in 0".01 unit

	Kiev			AGK3			Moskow		
spectar	Δ	ϵ	N	Δ	ϵ	N	Δ	ϵ	N
O,B,A	- 3	± 80	357	- 7	±61	327	- 5	±57	95
F	1	± 84	258	2	±66	230	- 6	±63	103
G	12	±116	133	11	±60	112	9	±70	47
K,M,N	-13	± 75	115	5	±57	89	19	±74	32

where Δ is the mean value of the differences within a group, ϵ is the determination error of a difference and N is the number of stars in right ascension and declination.

The differences $\Delta\alpha$ and $\Delta\delta$ obtained from the comparison between the Belgrade catalogue and the AGK3 are analysed appliying the formulae:

$$\Delta\alpha = A0 + A1\sin\alpha + B1\cos\alpha + A2\sin 2\alpha + B2\cos 2\alpha + \ldots$$
$$\Delta\delta = A0' + A1'\sin\alpha + B1'\cos\alpha + A2'\sin 2\alpha + B2'\cos 2\alpha + \ldots$$

The coefficients A0, Ai, Bi, A0', Ai' and Bi' (i = 1,2,3) determined by using the least–square method are presented in Table 9.

Using the coefficients A1, B1, A1' and B1' we calculate the amplitudes and the phases (only first–order terms are taken into account) of the functions:

$$\Delta\alpha = K\sin(\alpha - \pi)$$
$$\Delta\delta = K'\sin(\alpha - \pi')$$

Table 9. Systematid cifferences for stars common to Belgrade Double Stars Catalogue and AGK3

in $0^s.001$ unit							in $0''.01$ unit						
K0	A1	B1	A2	B2	A3	B3	K0'	A1'	B1'	A2'	B2'	A3'	B3'
2	-5	2	-5	2	-5	-1	5	11	3	1	-4	-0	-2
±2	±2	±3	±2	±3	±2	±2	±2	±3	±4	±3	±3	±3	±3
$\Delta\alpha = 0^s.005\sin(\alpha + 22^\circ.0)$							$\Delta\delta = -0''.12\sin(\alpha - 13^\circ.3)$						
±2 ±43.7							±4 ±15.5						

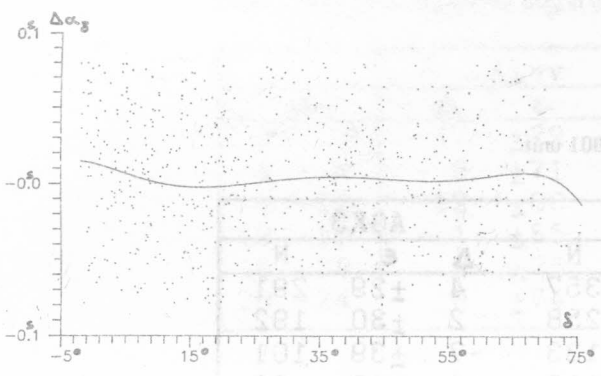

Fig. 1. Systematic differences $\Delta\alpha_\delta$ for stars common to Belgrade Double Star Catalogue and AGK3

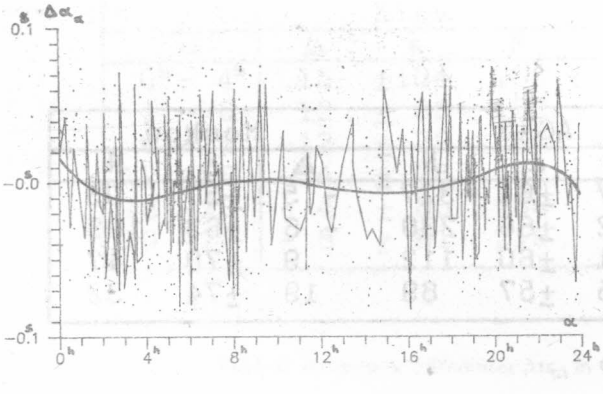

Fig. 2. Systematic differences $\Delta\alpha_\alpha$ for stars common to Belgrade Double Star Catalogue and AGK3

3. THE ANALYSIS OF THE OBTAINED RESULTS

The curves obtained by applying the polinomials sixth order and presented in the figures indicate periodical and seasonal characters for both systematic influences treated above.

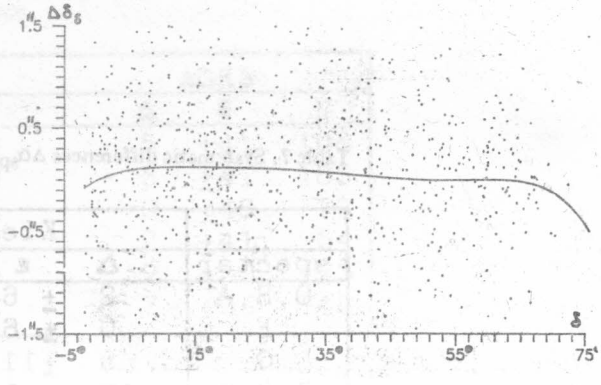

Fig. 3. Systematic differences $\Delta\delta_\delta$ for stars common to Belgrade Double Star Catalogue and AGK3

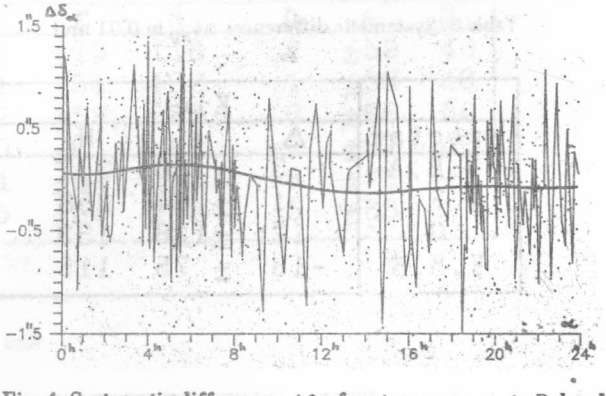

Fig. 4. Systematic differences $\Delta\delta_\alpha$ for stars common to Belgrade Double Star Catalogue and AGK3

One should say that there is a correlation between $\Delta\alpha_\delta$, $\Delta\delta_\delta$ on the one side and the derived system of the Belgrade instrument on the other side (Stančić, 1986).

The values of the quantity $\Delta\alpha_m$ are negligible, the ones of $\Delta\delta_m$ are present for two catalogues (Kiev and AGK3), whereas the values of $\Delta\alpha_{sp}$ and $\Delta\delta_{sp}$ are

significant. A prominent change of the same sign following the spectral type from O to M is apparent.

The earlier analyses of the systematic influence $\Delta\delta_{sp}$ (Sadžakov et al., 1975., 1982) have shown that the „blue" stars (O, B, A) appear to be nearer the zenith than the yellow and the red ones. This is also confirmed by the present analysis.

The values obtained by applying the Abbe criterion are in favour of the existence of the systematic influences $\Delta\alpha_{sp}$ and $\Delta\delta_{sp}$.

4. CONCLUSION

It is found that the systematic differences $\Delta\alpha_\alpha$ and $\Delta\delta_\alpha$ are periodical. According to the present results they may be due to the system of the Belgrade Large Meridian Circle, as well as to various, seasonal influences existing at the observational sites.

The systematic errors of $\Delta\alpha_m$ and $\Delta\delta_m$ types are evident, especially $\Delta\delta_m$ for stars whose apparent magnitude is about 7.5^m.

The systematic errors of $\Delta\alpha_{sp}$ and $\Delta\delta_{sp}$ types are the largest for stars of early spectral types. Their change is strictly systematic.

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UDC 521.936/.938
Original scientific paper

ANALYSIS OF CHANGES IN BELGRADE GEOGRAPHIC LATITUDE OVER THE PERIOD 1969.0–1975.0

R.Grujić, M.Djokić and B. Jovanović

(Received: October 10, 1989)

SUMMARY: **The change of the Belgrade geographic latitude analysed over this period appears to be without prominent features. The Z-term (its periodical part) is significantly smaller compared to earlier analyses of Belgrade latitude changes in which observations from the same programme performed before and after the period mentioned above were used. The Z-term is in a correlation with the change of the instrument's inclination and it is also dependent of the observing programme characteristics. The accuracy of latitude determination is significantly higher in the present analysis than the one obtained in the analysis for the period 1960.0–1965.5.**

1. INTRODUCTION

The observational material subjected to the present analysis was obtained with the zenith telescope (Askania, 110/1287 mm) of Belgrade Astronomical Observatory from observations belonging to a new programme (Ševarlić and Teleki, 1960). This six–year period of changes in the Belgrade geographic latitude containing 5 Chandlerian periods is chosen to be analysed because of programme possibilities especially favourable during it, actions applied for the purpose of realising the temperature protection of the pavilion and the instrument and also because of a new way of observing introduced at its beginning. All of this resulted in a significant improving in the accuracy of geographic latitude determinations. Together with the earlier analyses of Belgrade latitude changes found in the course of the new programme realisation: 1960.0–1965.5 (Teleki and Grujić, 1969), i.e 1983.0–1985.0 (Grujić and Teleki, 1987), the present analysis is in some way a contribution to a more complete realising of the characteristics of Belgrade–latitude changes obtained from the new–programme observations from the beginning of its application until nowadays (1960.0–1986.0).

The more favourable circumstances of observing during the observational period being the subject of the present analysis are generally the following ones:

a) The micrometric differences among the observing groups, as predicted by the programme (Ševarlić and Teleki, 1960), were in this observational period (more precise in 1970) at the minimum, i.e. they were approximately equal to zero. In this way the influence of the error of the micrometer–screw revolution on the latitude value in this period was minimal.

b) In the period 1968–1970 a number of temperature protecting action concerning the instrument, the pavilion, as well as the way of observing, was applied, which resulted independently of the influences mentioned above (a) in an enhancement in the accuracy of the latitude determinations compared to what had been the case before. These temperautre protecting action have been described in an earlier paper (Milovanović et al., 1981). It was demonstrated in that paper by analysing the accuracy of geographic latitude determinning with 1968 that the accuracy of our results become seriously enlarged with 1969 and afterwards. Compared with other stations all over the world equipped with the most up–to–date instruments (PZT and astrolabe) our instrument does not seem inferior. This fact has been also confirmed by analyses of some foreign specialists: e.g. Tanner, Guinot and others (Milovanović, 1971).

The rapid improvement in the accuracy of geographic latitude determinations performed with the zenith telescope in Belgrade after 1969 has been subjected to many analyses where various instrumental and meteorological influences existing before 1969 and after it have been examined. The result of these analyses is that all analysed influences have affected the latitude values significantly less after 1969 than before it. The results of these examinations have been published both in Yugoslavia and abroad, as seen from the text given below.

The results of the so–called E–W effect examinations for the period 1960.0–1969.0 were published by Teleki and Grujić (1982), i.e. by Grujić and Teleki (1987) for period 1969.0–1981.0. The results of the personal error examinations were published by Teleki and Grujić (1988). The influence of the micrometers-crew–revolution error because of the favourable circum-

stances within the programme mentioned above, affects the latitude values more significantly in the periods subjected to the two former analyses than in the period analysed here.

A contribution to the action of latitude–accuracy enhancement carried out in Belgrade is also the examinations of the Talcott–levels characteristics published by Grujić and Teleki (1982 I) and Teleki and Grujić (1985).

The meteorological influences are derived by analysing the velocity effect and the wind direction from the data obtained by observing with an automatic electrical anemometar between 1976 and 1981. The results of an analysis (Grujić and Teleki, 1984) indicate a significantly smaller wind influence on the latitutde value both in the direction and the velocity in this period, otherwise after applying the protective actions mentioned above, than before 1969, for which Ševarlic's examinations (Ševarlić, 1961) are available. The examinations of the so–called „night error" of observers are communicated by Grujić et al. (1985), whereby the fact of significantly smaller atmospheric influences during the second observing period than before 1969 is also confirmed.

2. OBSERVATIONAL DATA

In Table 1 the statistical data concerning the number of complete subgroups (5 Telecot's paris) observed within the period 1969.0–1975.0 are presented with the names of observers (RG = R. Grujić MD = M. Djokić, VM = V.Milovanović and LD = L.Djurović) and the total sum.

Table 1. Annual Number of Observed Groups as Function of Observers with Annual Sums

GODINA	RG	MD	VM	LD	Σ
1969	104	80	72	-	252
1970	79	79	97	12	274
1971	25	97	57	82	262
1972	95	65	-	47	207
1973	91	51	-	13	155
1974	117	70	-	-	187
Σ	311	444	226	154	1335

As seen from Table 1, 1335 subgroups or 6675 pairs were observed resulting in an annual average number of 1112 pairs. Since only complete subgroups are taken into account in the analysis, the latitude values are quite homogeneous.

The data concerning the total number of observed subgroups for each observer separately with the sum are presented in Table 2.

Table 2. Number of Observed Subgroups for each Observer separately and the Sum

Observer	Ia	Ib	IIa	IIb	IIIa	IIIb	IVa	IVb	Va	Vb	VIa	VIb	Σ
RG	44	36	27	31	41	38	48	47	59	51	49	40	511
MD	37	40	24	27	28	27	37	42	39	47	50	46	444
VM	31	31	16	18	8	6	9	6	20	21	35	25	226
LD	15	17	5	5	10	9	16	16	12	15	19	18	154
Σ	127	124	72	81	87	80	110	111	130	134	153	126	1335

The data concerning the number of evenings when two complete groups were observed (a group contains 10 Talcott's pairs) are presented in Table 3.

Table 3. Number of Observed Nights when Series of two Neighbour Groups were observed and the Sum

observed groups						
I,II	II,III	III,IV	IV,V	V,VI	VI,I	Σ
21	16	24	18	22	43	144

The data concerning the number of evenings when two subgroups in various combinations were observed are presented in Table 4.

Table 4. Number of Subgroups observed the same Evening in various Combinations and the Sum

Ia,Ib	95	IVa,IVb	81
Ia,IIa	22	IVa,Va	23
Ia,IIb	27	IVa,Vb	23
Ib,IIa	29	IVb,Va	34
Ib,IIb	29	IVb,Vb	32
IIa,IIb	56	Va,Vb	92
IIa,IIIa	20	Va,VIa	34
IIa,IIIb	18	Va,VIb	26
IIb,IIIa	27	Vb,VIa	40
IIb,IIIb	20	Vb,VIb	27
IIIa,IIIb	67	VIa,VIb	97
IIIa,IVa	33	VIa,Ia	53
IIIa,Ivb	27	VIa,Ib	52
IIIb,Iva	36	VIb,Ia	53
IIIb,IVb	30	VIb,Ib	50
		Σ	1258

On the basis of the data presented in Tables 1–4 we conclude that the distribution of the groups and subgroups in the present analysis is better than that corresponding to the period 1960.0–1965.5 (Teleki and Grujić, 1969). The annual average number of Talcott's pairs observations has been increased from 786 (in the earlier analysis) to 1112 in the present one. The decrease in the rate of the difference between the smallest and the largest numbers of subgroups observed is according to Table 2 from 12% to 6%, according to Table 3 from 21% to 19% and according to Table 4 from 17% to 6%.

The value of the micrometer–screw revolution was regularly controlled. The corrections were obtained on the basis of the analysis of observed measure pairs

from the Washington Catalogue of zenith stars. The progresive and periodic errors, as well as the temperature coefficient, were not applied because the analysis of these influences demonstrates their unreliability (unc) (Milovanović et al., 1970). The values of the micrometer –screw revolution (R) applied for different observing periods are: 40".0826 (1.I.1968–1.IV.1969), 40".1060 (1.IV.1969–1.I.1971), 40".0660 (1.I.1971– ...). The last one was obtained from the examinations of Grujić and Teleki (1984) and confirmed by Djokić (1985).

The declination corrections were applied on the basis of the analysis of the observational material covering 1969.0–1972.5. They were communicated by Grujić et al. (1975).

All latitudes observed by us were reduced to the FK4 system.

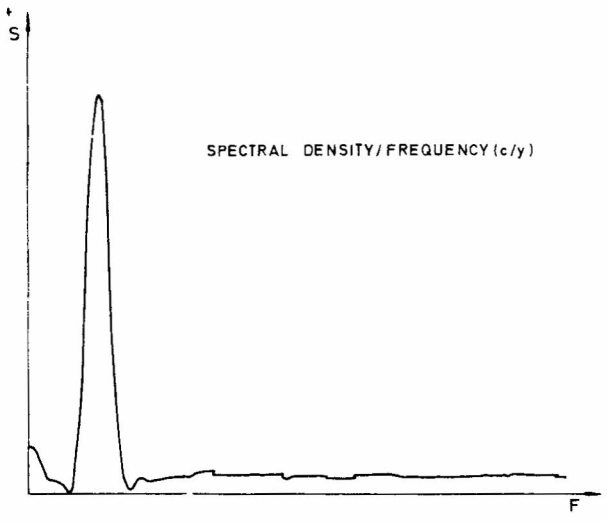

Fig. 2.

3. LATITUDE CHANGE ANALYSIS

The smoothing–out of latitude values is done by using the mean values of 10 successive subgroups. Thus the smoothed latitude is determined by applying the gravity centre method from the obtained mean latitude value. A second smoothing–out is not done because no significant difference between such two smoothings has been found in preliminary analysis. In Fig. 1 is presented the curve describing the latitude change over the period 1969.0–1975.0 after smoothing–out by using the gravity centre method (full line) and from the BIH data (dashed line).

The latitude values for every 0.1 part of a year taken from the latitude–change curve (Fig. 1) are given in Table 5.

Using the latitude values from Table 5 we determine the values of the mean latitudes by applying Orlov's method. The values of the mean latitudes obtained in this way are presented in Table 6 and Fig. 3.

The difference of the mean latitudes between the maximal value and the minimal one is equal to 0".108 being approximately equal to the value obtained from

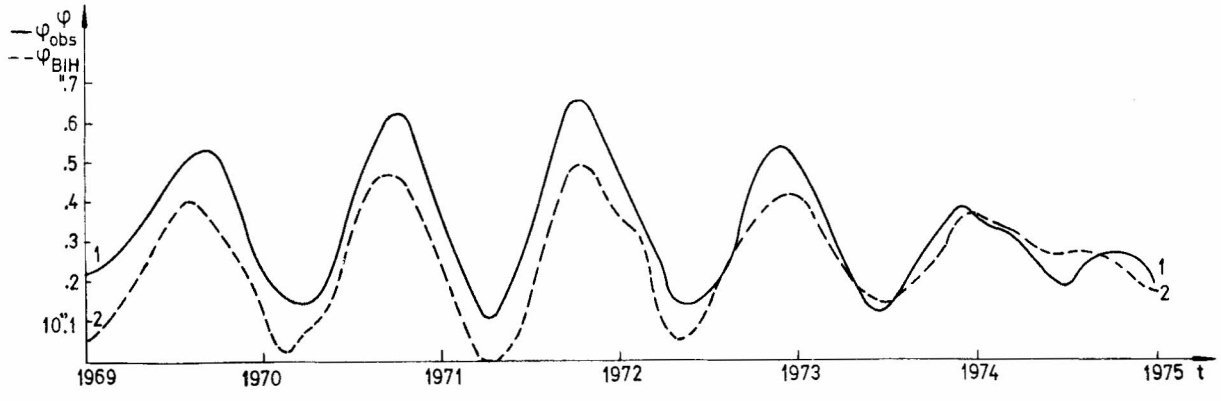

Fig. 1.

To the latitude values of this period we also apply the spectral analysis; the spectrogram is presented in Fig. 2. A peak with a Chandlerian period. is conspicuous.

the earlier analysis (1960.0–1965.5): 0".083. The enhanced accuracy of latitude determination in the period being the subject to the present analysis has no influence

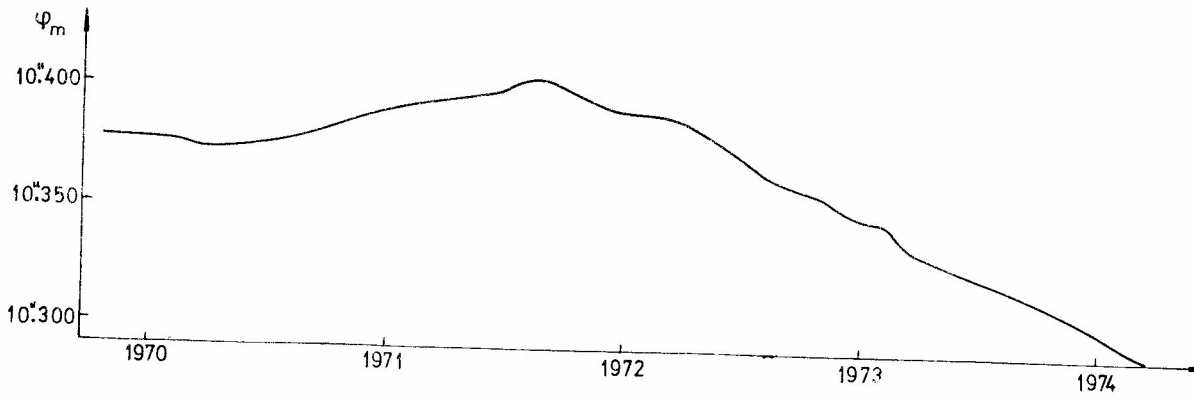

Fig 3.

on the decrease in the changes of the mean latitude. According to the present results the causes of the change in the mean latitude should be looked for among other influences.

Table 5. Latitude Values for 0.1 Year taken from the Smoothed Curve of latitude Change at Belgrade

year	φ = 44° 48'+
1969.0	10".264
.1	.276
.2	.310
.3	.355
.4	.415
.5	.465
.6	.512
.7	.540
.8	.485
.9	.368
1970.0	.278
.1	.212
.2	.200
.3	.193
.4	.279
.5	.400
.6	.520
.7	.602
.8	.604
.9	.493
1971.0	.396
.1	.280
.2	.176
.3	.165
.4	.240
.5	.340
.6	.449
.7	.612
.8	.640
.9	.572
1972.0	.502
.1	.400
.2	.300
.3	.194
.4	.185
.5	.210
.6	.260
.7	.414
.8	.500
.9	.538
1973.0	10".500
1973.1	.423
.2	.337
.3	.244
.4	.176
.5	.180
.6	.236
.7	.296
.8	.345
.9	.400
1974.0	.365
.1	.350
.2	.325
.3	.290
.4	.240
.5	.219
.6	.270
.7	.292
.8	.290
.9	.280
1975.0	.223

Table 6. Values of Mean Latitude found by using Orlov's Method for every 0.1 Year

year	$\varphi = 44^{\circ}\ 48' +$
1969.8	10".375
.9	.374
1970.0	.374
.1	.373
.2	.372
.3	.372
.4	.372
.5	.372
.6	.375
.7	.378
.8	.381
.9	.384
1971.0	.386
.1	.388
.2	.391
.3	.394
.4	.397
.5	.399
.6	.400
.7	.398
.8	.395
.9	.391
1972.0	.388
.1	.388
.2	.386
.3	.382
.4	.376
.5	.368
.6	.360
.7	.356
.8	.353
.9	.350
1973.0	.345
.1	.340
.2	.334
.3	.328
.4	.324
.5	.322
.6	.318
.7	.312
.8	.307
.9	.303
1974.0	.300
.1	.296
.2	.292

Table 7. Values of Z–term for every 0.1 Year

Godina	z-član
1969.8	+0".140
.9	.071
1970.0	.090
.1	.112
.2	.070
.3	.035
.4	.040
.5	.034
.6	.057
.7	.106
.8	.124
.9	.104
1971.0	.093
.1	.089
.2	.073
.3	.063
.4	.105
.5	.071
.6	.032
.7	.095
.8	.105
.9	.092
1972.0	.091
.1	.020
.2	.102
.3	.061
.4	.045
.5	+0.010
.6	−0.028
.7	+0.066
.8	+0.104
.9	.118
1973.0	.084
.1	.058
.2	.046
.3	.036
.4	.012
.5	.027
.6	.059
.7	.090
.8	.094
.9	.074
1974.0	.045
.1	.051
.2	.050

The Z–term whose values are presented in Table 7 we determined using the values of the mean latitude from Table 6 obtained by means of Orlov's formula from the following realtion

$$\varphi = \varphi_o + \Delta\varphi + Z$$

where φ is the latitude value obtained from the smoothed curve of latitudechanges, φ_o is the value of the mean latitude obtained by applying Orlov's formula, $\Delta\varphi$ is the latitude change according to the BIH data for every 0.1 part of a year.

To the values of the Z–term from Table 7 we apply the analysis. The form of the harmonic expression is as follows

$$Z = +0''.066 + 0''.022 \cos(t - 312°.4) \qquad (1)$$

To the Z–term values from Table 7 we also apply the spectral analysis. It is seen from the spectrogram (Fig. 4) that within the Z–term two periodicities are present: an annual one (more prominent) and another one with period of 0.76 yr. The presence of a semi–annual period seems also possible.

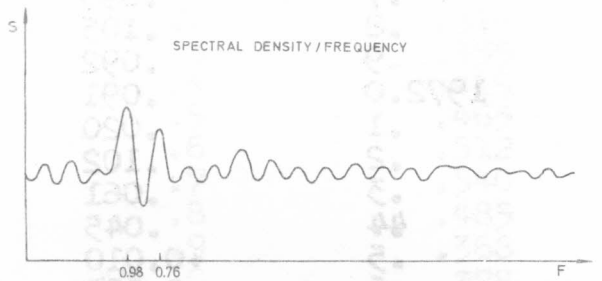

Fig. 4.

In order to examine the cause of arising of the Z–term we compare the averaged annual Z–term values from Table 7 with the annual changes in the instrument's inclination (β) whose both changes are presented in Fig. 5. The comparison indicates a good correlation between them as seen from the figure. The correlation coefficient (r) is equal to 0.90. The harmonic expression for the inclination β is as follows

$$\beta = -0''.034 + 0''.019 \cos(t - 312°.0) \qquad (2)$$

An earlier analysis of the Z–term and the inclination β for the period 1967–1968 performed by Djokić (1975), with a phase displacement in the Z-term (Fig. 6), has also yielded a good correlation between the two kinds of changes. Their harmonic expressions are

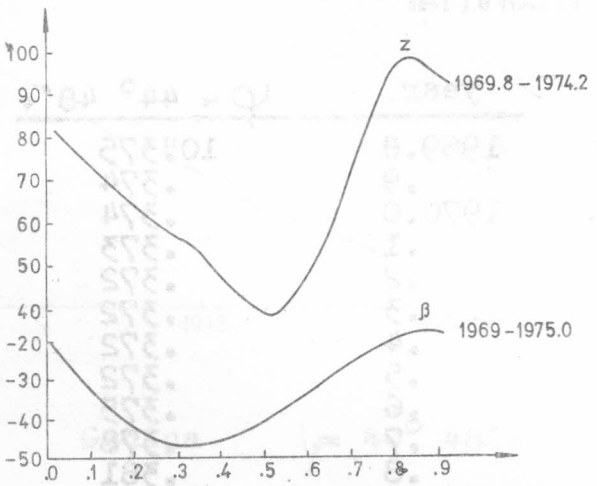

Fig. 5.

$$\beta = -0''.050 + 0''.260 \cos(t - 261°.2) \qquad (3)$$
$$Z = +0''.051 + 0''.047 \cos(t - 104°.6) \qquad (4)$$

with the correlation coefficient r = 0.98.

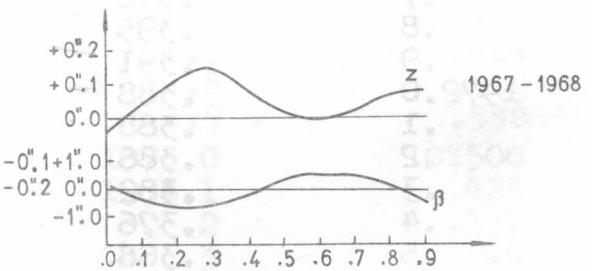

Fig. 6.

There is certainly a relationship between the phase change in the Z–term on one side and the applied protective action and the new way of observing described in the introduction on the other side. It is important to emphasize here the fact of the significant diminutions in the periodic part of the Z–term and in the instrument's inclination (β) after applying the protective action on the instrument and pavilion in 1968–1970 (expressions (1) and (2)). It is doubtless that the diminishing in the inclination β affected the diminishing in the Z–term. In this way the justification of the diminishing the instrument's inclination in observations of star pairs beginning with 1969 is confirmed once more.

The periodic part of the Z–term derived from vaiations in the Belgrade latitude between 1983.0

and 1986.0 (Grujić and Teleki, 1987) has been increased again to the approximately same value obtained from the analysis of changes in the Belgrade latitude between 1960.0 and 1965.5 and displaced in phase (Teleki and Grujić, 1969). Since between 1983.0 and 1986.0 another programme of determination of changes in the Belgrade latitude was introduced in observations, adding in this way series arranged in right ascension to the existing programme at its empty places, in the given analysis of that period the latitude change from the data obtained by applying both programmes is also treated. It is seen from this analysis that the annual periodic part of the Z–term is significantly diminished now. The expressions describing the Z–term for the period 1983.0–1986.0 from the original (new) programme and from the complete one (containing additional series) are following

$$Z = +0''.063 + 0''.046 \cos(t + 85^\circ) \quad (5)$$
$$Z = +0''.064 + 0''.005 \cos(t + 53^\circ) \quad (6)$$

Since the additional programme was introduced in 1983 for the sake of removing the influence (Grujić and Teleki, 1987) which might be due to the error in the micrometer–screw revolution through the micrometer differences in the groups of the original programme having been increased after 1970, the results of the present analysis and of that concerning the period 1983.0–1986.0 indicate as the cause of arising of the Z–term largely the way of composing the programme, itself, as well as the error of the micrometer–screw revolution.

Although, we have very carefully examined the values of the micrometer–screw revolution and the observational material has been corrected not once by use of different methods, the present analysis suggests the presence of some errors being not removed as yet which can be unifying their influence with other programme characteristics preserve a negative influence on the results of the latitude change examinations. Therefore we shall have to remove these effects by acting in both ways: examining the value of the micrometer–screw revolution and by creating an adequate programme.

The origin of a period lasting 9 months in the Z–term is not clear yet. This is a task for the future.

The accuracy of the latitude value is determined as in the previous paper (Teleki and Grujić, 1969) from the differences (Δ), $\Delta = \varphi_a - \varphi_b$, where φ_a and φ_b are the latitude values within the subgroups (5 pairs) of groups observed during the same night. Both the mean error E_Δ and the root–mean–square determination error of a single observational pair $E_p = E_\Delta \cdot \sqrt{2.5}$ are derived. The values Δ, E_Δ, E_p are presented in Table 8, where **n** is the number of differences Δ.

Table 8. Values of n, Δ, E_Δ, E_p, when n is the number of differences, Δ is the latitude difference between subgroups, E_Δ mean error, E_p mean error of latitude determination from a single observational pair, for all groups and the programme

Grupa	I	II	III	IV	V	VI	Program
n	108	59	69	88	99	112	535
Δ	-0.005	-0.024	+0.087	-0.042	+0.006	+0.003	+0.002
ε_Δ	±0.103	±0.103	±0.117	±0.103	±0.075	±0.071	±0.093
ε_p	±0.163	±0.162	±0.184	±0.163	±0.117	±0.112	±0.146

The accuracy of the latitude determination in a single pair obtained in the present analysis ($E = \pm 0''.146$) significantly exceeds that from analysis done for the period 1960.0–1965.5 ($E = \pm 0''.272$). An approximately equal accuracy enhancement occurs in four groups I, IV, V and VI, whereas in II nad III groups a significant accuracy enhancement is achieved. Since these groups are observed during the winter observational season, it is certain that effect is due to the protective actions described in the introduction. This accuracy of latitude determination in our observations has been also preserved in the present measurements. This is seen from the results of the accuracy determination for the latitude values obtained in the analysis of the latitude changes between 1983.0–1986.0 on the basis of observations performed within both programmes (Table 7 of the paper by Grujić and Teleki, 1987).

4. CONCLUSION

The latitude change at Belgrade during the observing period 1969.0–1975.0 is gradual. The Z–term (its periodic part) is significantly smaller compared to both periods analysed as yet on the basis of observations within the same observing programme. It is correlated to the change in the instrument's inclination. There is also a relationship between the latitude change and the programme characteristics in the micrometer differences of observed groups. The changes in the mean latitude (difference between minimal and maximal value) are apprixomately the same as in the period 1960.0–1965.5. The temperature protection concerning the instrument, the pavilion and the way of observing has doubtlessly resulted in an enhancement of the accuracy of latitude determinations.

In analyses of the latitude change at Belgrade which will be carried out in the future, examinations of the charakter of the mean latitude change based on the entire observational material covering the period 1960.0–1989.0 and following the new latitude programme will be of importance.

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UDC 523.44

Preliminary report

546 PRECISE ASTROMETRIC POSITIONS OF MINOR PLANETS OBTAINED AT THE GPO TELESCOPE OF ESO–LA SILLA

H. Debehogne

Observatoire Royal de Belgique, Avenue Circulaire 3, B – 1180, Bruxelles, Belgique

D. Olević and V. Protić–Benišek

Astronomical Observatory, 11050 Belgrade, Volgina 7, Yugoslavia

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SUMMARY: Precise astrometric positions of minor planets: 383 Janina, 1111 Reinmuthia, 1586 Thiele, 1674 Groeneveld, 2682 Soromundi, 2911 1938 GJ, 3009 Coventry, 3032 Evans and *19 new* ones, which provisional designations 1986 QB_1 – 1986 QC_3 have been given by the Minor Planet Center, are presented in this paper.

Photographic observations of minor planets were carried out in August and September 1986 with the Grand Prism Objective (GPO), 40/400 cm) at the European Southern Observatory, La Silla, Chile, by H. Debehogne.

1. INTRODUCTION

During the mission in August–September 1986, H. Debehogne obtained 536 precise astrometric positions of 27 minor planets with Grand Prism Objective 40/400 cm at the European Southern Observatory, La Silla.

19 new objects were discovered and the provisional designations are 1986 QB_1 – 1986 QC_3, given by the Minor Planet Center.

2. OBSERVATIONS, MEASUREMENTS AND RREDUCTIONS

Minor planet observations were performed using the Kodak II–0 plates, which were very well sensibilised in the Optical Laboratory of La Silla. Three exposures on each plate were done.

Five reference stars of SAO catalogue were selected per plate. All the plates were measured on the Ascorecord Zeiss measuring machine of the Observatoire Royal de Belgique by H. Debehogne.

The method of dependences was used to obtain the precise positions and the Least Square Method was taken to derive the residuals of the star positions. The computations were performed at the Uccle Observatory with the UNIVAC 9200 computer, using the program defined by H. Debehogne.

3. RESULTS

The results of observations collected during this mission in 1986 are presented in two Tables.

Table I contains, respectively: the ordinal number of each position, the object designation, ordinal number of the plate, date in UT, the topocentric coordinates α and δ for the equinox 1950.0 and the residuals.

For the new asteroids the calculated positions only are presented.

In the Table II we give also the ordinal number of each position, the star identification – SAO number, the last digit of α and δ of the star (proper motions are included), the residuals on the reference stars, computed for each of three exposures and the dependences.

ACKNOWLEDGEMENTS

We wish to express our thanks to the European Southern Observatory for complete financial support for H. Debehogne's mission at La Silla.

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H M S	DELTA 1950 ° ′ ″	RESIDUALS M ″
501	1986QY3	10190	9	1.323263	22 45 59.901	-12 50 17.68	
502	1986QY3	10206	9	2.362499	22 45 10.940	-12 57 40.15	
503	1986QY3	10206	9	2.366665	22 45 10.742	-12 57 42.00	
504	1986QY3	10206	9	2.370832	22 45 10.540	-12 57 43.76	
505	1986QY3	10237	9	4.300346	22 43 39.941	-13 11 09.66	
506	1986QY3	10237	9	4.305902	22 43 39.660	-13 11 12.00	
507	1986QY3	10237	9	4.310762	22 43 39.422	-13 11 14.00	
508	1986QY3	10282	9	6.324652	22 42 5.440	-13 24 45.60	
509	1986QY3	10282	9	6.329514	22 42 5.206	-13 24 47.45	
510	1986QY3	10282	9	6.334373	22 42 5.007	-13 24 49.64	
511	1986QY3	10302	9	7.292707	22 41 20.877	-13 31 04.25	
512	1986QY3	10302	9	7.297569	22 41 20.642	-13 31 06.49	
513	1986QY3	10302	9	7.302429	22 41 20.401	-13 31 08.44	
514	1986QY3	10386	9	11.320486	22 38 20.614	-13 55 46.33	
515	1986QY3	10386	9	11.325346	22 38 20.401	-13 55 48.00	
516	1986QY3	10386	9	11.330208	22 38 20.175	-13 55 49.76	
517	1986RC5	10204	9	2.296873	22 41 45.811	-12 05 49.63	
518	1986RC5	10204	9	2.301735	22 41 45.678	-12 05 54.79	
519	1986RC5	10204	9	2.306597	22 41 45.542	-12 05 59.91	
520	1986RC5	10218	9	3.276041	22 41 18.867	-12 22 49.62	
521	1986RC5	10218	9	3.280901	22 41 18.713	-12 22 54.50	
522	1986RC5	10218	9	3.285763	22 41 18.572	-12 22 59.80	
523	1986RC5	10282	9	6.324652	22 39 55.510	-13 14 53.59	
524	1986RC5	10282	9	6.329514	22 39 55.369	-13 14 58.65	
525	1986RC5	10282	9	6.334373	22 39 55.230	-13 15 03.66	
526	1986RC5	10386	9	11.320486	22 37 47.264	-14 36 19.92	
527	1986RC5	10386	9	11.325346	22 37 47.138	-14 36 24.50	
528	1986RC5	10386	9	11.330208	22 37 47.018	-14 36 29.11	
529	1986QC3	10158	8	29.277777	22 50 44.006	-12 10 05.35	
530	1986QC3	10158	8	29.283333	22 50 43.641	-12 10 06.00	
531	1986QC3	10158	8	29.288887	22 50 43.258	-12 10 06.62	
532	1986QC3	10175	8	31.356596	22 48 27.121	-12 14 16.70	
533	1986QC3	10175	8	31.361458	22 48 26.795	-12 14 17.28	
534	1986QC3	10175	8	31.366318	22 48 26.469	-12 14 17.87	
535	1986QC3	10190	9	1.313541	22 47 23.718	-12 16 08.71	
536	1986QC3	10190	9	1.318401	22 47 23.387	-12 16 09.21	
537	1986QC3	10190	9	1.323263	22 47 23.051	-12 16 09.67	
538	1986QC3	10282	9	6.324652	22 41 49.376	-12 24 48.57	
539	1986QC3	10282	9	6.329514	22 41 49.059	-12 24 49.00	
540	1986QC3	10282	9	6.334373	22 41 48.737	-12 24 49.36	
541	1986QC3	10283	9	6.366665	22 41 46.553	-12 24 52.12	
542	1986QC3	10283	9	6.370832	22 41 46.277	-12 24 52.67	
543	1986QC3	10283	9	6.374998	22 41 45.985	-12 24 53.23	
544	1986QC3	10346	9	9.260763	22 38 35.631	-12 28 50.54	
545	1986QC3	10346	9	9.265623	22 38 35.311	-12 28 51.01	
546	1986QC3	10346	9	9.270485	22 38 34.990	-12 28 51.50	

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M	"
451	1986QB3	10350	9	9.334026	22	42	46.829	-12	59	18.91		
452	1986QB3	10350	9	9.339582	22	42	46.583	-12	59	20.36		
453	1986QB3	10350	9	9.345139	22	42	46.342	-12	59	21.73		
454	1986QB3	10386	9	11.320486	22	41	21.309	-13	07	41.92		
455	1986QB3	10386	9	11.325346	22	41	21.126	-13	07	43.06		
456	1986QB3	10386	9	11.330208	22	41	20.921	-13	07	44.22		
457	1986QB3	10387	9	11.339930	22	41	20.459	-13	07	46.62		
458	1986QB3	10387	9	11.344791	22	41	20.266	-13	07	48.35		
459	1986QB3	10387	9	11.349651	22	41	20.042	-13	07	49.94		
460	1986QB3	10420	9	13.357635	22	39	55.474	-13	15	52.92		
461	1986QB3	10420	9	13.361805	22	39	55.296	-13	15	54.00		
462	1986QB3	10420	9	13.365971	22	39	55.122	-13	15	54.76		
463	1986QB3	10427	9	14.377083	22	39	13.290	-13	19	49.84		
464	1986QB3	10427	9	14.381248	22	39	13.116	-13	19	50.66		
465	1986QB3	10427	9	14.385414	22	39	12.939	-13	19	51.83		
466	1986QG3	10158	8	29.277777	22	55	19.055	-12	28	49.77		
467	1986QG3	10158	8	29.283333	22	55	18.739	-12	28	50.63		
468	1986QG3	10158	8	29.288887	22	55	18.422	-12	28	51.41		
469	1986QG3	10175	8	31.356596	22	53	30.692	-12	35	05.92		
470	1986QG3	10175	8	31.361458	22	53	30.405	-12	35	06.73		
471	1986QG3	10175	8	31.366318	22	53	30.122	-12	35	07.59		
472	1986QG3	10190	9	1.313541	22	52	40.428	-12	37	55.76		
473	1986QG3	10190	9	1.318401	22	52	40.162	-12	37	56.74		
474	1986QG3	10190	9	1.323263	22	52	39.882	-12	37	57.88		
475	1986QG3	10206	9	2.362499	22	51	44.946	-12	40	56.75		
476	1986QG3	10206	9	2.366665	22	51	44.723	-12	40	57.58		
477	1986QG3	10206	9	2.370832	22	51	44.489	-12	40	58.41		
478	1986QG3	10237	9	4.300346	22	50	2.250	-12	46	22.47		
479	1986QG3	10237	9	4.305902	22	50	1.951	-12	46	23.10		
480	1986QG3	10237	9	4.310762	22	50	1.699	-12	46	23.92		
481	1986QG3	10302	9	7.292707	22	47	23.663	-12	54	07.92		
482	1986QG3	10302	9	7.297569	22	47	23.391	-12	54	08.66		
483	1986QG3	10302	9	7.302429	22	47	23.125	-12	54	09.42		
484	1986QG3	10304	9	7.324652	22	47	21.927	-12	54	13.55		
485	1986QG3	10304	9	7.329514	22	47	21.662	-12	54	14.28		
486	1986QG3	10304	9	7.334373	22	47	21.376	-12	54	15.00		
487	1986QG3	10350	9	9.334026	22	45	36.431	-12	58	57.38		
488	1986QG3	10350	9	9.339582	22	45	36.142	-12	58	58.22		
489	1986QG3	10350	9	9.345139	22	45	35.846	-12	58	59.04		
490	1986QG3	10387	9	11.339930	22	43	52.739	-13	03	15.37		
491	1986QG3	10387	9	11.344791	22	43	52.489	-13	03	15.92		
492	1986QG3	10387	9	11.349651	22	43	52.217	-13	03	16.44		
493	1986QY3	10175	8	31.356596	22	46	45.225	-12	43	20.94		
494	1986QY3	10175	8	31.361458	22	46	45.000	-12	43	23.05		
495	1986QY3	10175	8	31.366318	22	46	44.777	-12	43	25.08		
496	1986QY3	11188	9	1.260763	22	46	3.002	-12	49	51.40		
497	1986QY3	11188	9	1.265623	22	46	2.759	-12	49	53.46		
498	1986QY3	11188	9	1.270485	22	46	2.514	-12	49	55.54		
499	1986QY3	10190	9	1.313541	22	46	0.349	-12	50	13.80		
500	1986QY3	10190	9	1.318401	22	46	0.121	-12	50	15.62		

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 6S	5000.	0.274E-01	0.208E-01	0.615E-02	0.548E-02	0.528E-02	0.466E-02
3867.5A	10000.	0.291E-01	0.202E-01	0.690E-02	0.630E-02	0.593E-02	0.537E-02
c= 0.38E+18	20000.	0.285E-01	0.158E-01	0.775E-02	0.717E-02	0.666E-02	0.613E-02
	30000.	0.302E-01	0.130E-01	0.830E-02	0.772E-02	0.713E-02	0.661E-02
	40000.	0.310E-01	0.110E-01	0.871E-02	0.813E-02	0.748E-02	0.696E-02
	80000.	0.298E-01	0.717E-02	0.979E-02	0.916E-02	0.840E-02	0.787E-02
2P - 8S	5000.	0.918E-01	0.663E-01	0.216E-01*	0.181E-01*		
3652.0A	10000.	0.935E-01	0.601E-01	0.243E-01*	0.213E-01*	0.208E-01*	0.181E-01*
c= 0.14E+18	20000.	0.988E-01	0.417E-01	0.272E-01*	0.246E-01*	0.234E-01*	0.210E-01*
	30000.	0.105	0.330E-01	0.292E-01*	0.266E-01*	0.250E-01*	0.227E-01*
	40000.	0.104	0.258E-01	0.306E-01*	0.281E-01*	0.263E-01*	0.240E-01*
	80000.	0.983E-01	0.139E-01	0.345E-01*	0.319E-01*	0.295E-01*	0.273E-01*
2P -10S	5000.	0.260	0.173				
3562.9A	10000.	0.249	0.133				
c= 0.68E+17	20000.	0.269	0.849E-01				
	30000.	0.276	0.651E-01				
	40000.	0.270	0.495E-01				
	80000.	0.257	0.236E-01				
2P - 3D	5000.	0.280E-02	-0.770E-03	0.591E-03	-0.496E-03	0.526E-03	-0.426E-03
5875.7A	10000.	0.302E-02	-0.425E-03	0.650E-03	-0.559E-03	0.574E-03	-0.479E-03
c= 0.19E+19	20000.	0.301E-02	-0.115E-03	0.718E-03	-0.629E-03	0.631E-03	-0.540E-03
	30000.	0.300E-02	0.390E-04	0.763E-03	-0.673E-03	0.667E-03	-0.578E-03
	40000.	0.299E-02	0.832E-04	0.798E-03	-0.707E-03	0.696E-03	-0.607E-03
	80000.	0.296E-02	0.124E-03	0.896E-03	-0.794E-03	0.771E-03	-0.682E-03
2P - 4D	5000.	0.244E-01	0.271E-03	0.152E-01*	0.128E-01*	0.127E-01*	0.107E-01*
4471.5A	10000.	0.218E-01	-0.702E-03	0.173E-01*	0.151E-01*	0.145E-01*	0.125E-01*
c= 0.14E+17	20000.	0.189E-01	-0.146E-03	0.183E-01	0.180E-01	0.167E-01*	0.148E-01*
	30000.	0.174E-01	-0.156E-03	0.174E-01	0.197E-01	0.178E-01	0.161E-01
	40000.	0.163E-01	-0.620E-04	0.163E-01	0.209E-01	0.182E-01	0.177E-01
	80000.	0.140E-01	0.120E-03	0.117E-01	0.203E-01	0.172E-01	0.200E-01
2P - 5D	5000.	0.638E-01	0.116E-03				
4026.2A	10000.	0.568E-01	-0.421E-03				
c= 0.68E+16	20000.	0.492E-01	-0.885E-03	0.499E-01*	0.466E-01*		
	30000.	0.450E-01	-0.387E-03	0.486E-01*	0.518E-01*		
	40000.	0.421E-01	-0.162E-03	0.459E-01*	0.542E-01*	0.494E-01*	0.449E-01*
	80000.	0.356E-01	0.201E-03	0.338E-01*	0.557E-01*	0.480E-01*	0.531E-01*
2P - 6D	5000.	0.132	-0.516E-02				
3819.6A	10000.	0.118	-0.281E-02				
c= 0.36E+16	20000.	0.103	-0.188E-02				
	30000.	0.940E-01	-0.815E-03				
	40000.	0.880E-01	-0.231E-03				
	80000.	0.742E-01	-0.172E-03	0.870E-01*	0.129*		
2P - 7D	5000.	0.238	-0.134E-01				
3705.0A	10000.	0.215	-0.944E-02				
c= 0.17E+16	20000.	0.188	-0.426E-02				
	30000.	0.172	-0.229E-02				
	40000.	0.161	-0.116E-02				
	80000.	0.136	-0.194E-03				
2P - 8D	5000.	0.385	-0.202E-01				
3634.2A	10000.	0.353	-0.154E-01				
c= 0.15E+16	20000.	0.312	-0.569E-02				
	30000.	0.287	-0.295E-02				
	40000.	0.270	-0.150E-02				
	80000.	0.228	-0.159E-04				

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M	"
351	1986QD3	10302	9	7.302429	22	44	25.726	-14	02	10.00		
352	1986QD3	10386	9	11.320486	22	40	19.877	-14	04	09.71		
353	1986QD3	10386	9	11.325346	22	40	19.584	-14	04	09.75		
354	1986QD3	10386	9	11.330208	22	40	19.278	-14	04	09.87		
355	1986QH3	10158	8	29.277777	22	56	53.333	-13	14	32.39		
356	1986QH3	10158	8	29.283333	22	56	53.056	-13	14	35.02		
357	1986QH3	10158	8	29.288887	22	56	52.783	-13	14	37.57		
358	1986QH3	10303	9	7.308680	22	49	24.659	-14	24	47.27		
359	1986QH3	10303	9	7.313541	22	49	24.415	-14	24	49.71		
360	1986QH3	10303	9	7.318401	22	49	24.174	-14	24	52.00		
361	1986QX3	10175	8	31.356596	22	46	13.585	-12	33	36.91		
362	1986QX3	10175	8	31.361458	22	46	13.317	-12	33	38.84		
363	1986QX3	10175	8	31.366318	22	46	13.065	-12	33	40.78		
364	1986QX3	11188	9	1.260763	22	45	26.596	-12	39	38.67		
365	1986QX3	11188	9	1.265623	22	45	26.334	-12	39	41.00		
366	1986QX3	11188	9	1.270485	22	45	26.077	-12	39	42.93		
367	1986QX3	10190	9	1.313541	22	45	23.764	-12	39	59.62		
368	1986QX3	10190	9	1.318401	22	45	23.501	-12	40	01.58		
369	1986QX3	10190	9	1.323263	22	45	23.238	-12	40	03.65		
370	1986QX3	10206	9	2.362499	22	44	29.027	-12	46	54.00		
371	1986QX3	10206	9	2.366665	22	44	28.801	-12	46	55.61		
372	1986QX3	10206	9	2.370832	22	44	28.575	-12	46	57.21		
373	1986QX3	10237	9	4.300346	22	42	48.457	-12	59	23.08		
374	1986QX3	10237	9	4.305902	22	42	48.168	-12	59	25.18		
375	1986QX3	10237	9	4.310762	22	42	47.919	-12	59	27.05		
376	1986QX3	10260	9	5.359373	22	41	53.797	-13	06	02.16		
377	1986QX3	10260	9	5.364235	22	41	53.538	-13	06	04.07		
378	1986QX3	10260	9	5.369097	22	41	53.284	-13	06	06.04		
379	1986QX3	10282	9	6.324652	22	41	4.418	-13	11	59.42		
380	1986QX3	10282	9	6.329514	22	41	4.166	-13	12	01.27		
381	1986QX3	10282	9	6.334373	22	41	3.912	-13	12	03.10		
382	1986QX3	10302	9	7.292707	22	40	15.339	-13	17	50.59		
383	1986QX3	10302	9	7.297569	22	40	15.096	-13	17	52.14		
384	1986QX3	10302	9	7.302429	22	40	14.852	-13	17	53.85		
385	1986QX3	10386	9	11.320486	22	36	56.468	-13	40	50.03		
386	1986QX3	10386	9	11.325346	22	36	56.224	-13	40	51.52		
387	1986QX3	10386	9	11.330208	22	36	55.989	-13	40	53.00		
388	1986RH5	10303	9	7.308680	22	53	9.218	-14	18	17.78		
389	1986RH5	10303	9	7.313541	22	53	8.932	-14	18	17.83		
390	1986RH5	10303	9	7.318401	22	53	8.643	-14	18	18.19		
391	1986RQ5	10348	9	9.296873	23	45	7.921	-14	04	39.44		
392	1986RQ5	10348	9	9.301735	23	45	7.657	-14	04	41.00		
393	1986RQ5	10348	9	9.306597	23	45	7.392	-14	04	42.72		
394	1986RQ5	10349	9	9.312847	23	45	7.061	-14	04	44.89		
395	1986RQ5	10349	9	9.317707	23	45	6.803	-14	04	46.59		
396	1986RQ5	10349	9	9.322569	23	45	6.541	-14	04	48.07		
397	1986RQ5	10410	9	12.393749	23	42	24.593	-14	21	35.00		
398	1986RQ5	10410	9	12.397915	23	42	24.374	-14	21	36.40		
399	1986RQ5	10410	9	12.402082	23	42	24.127	-14	21	37.91		
400	1986RQ5	10428	9	14.393749	23	40	36.666	-14	32	00.25		

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H M S	DELTA 1950 ° ' "	RESIDUAL M
301	1986QF3	10175	8	31.356596	22 52 56.511	-14 04 57.69	
302	1986QF3	10175	8	31.361458	22 52 56.298	-14 05 00.11	
303	1986QF3	10175	8	31.366318	22 52 56.080	-14 05 02.57	
304	1986QF3	10190	9	1.313541	22 52 14.437	-14 12 41.45	
305	1986QF3	10190	9	1.318401	22 52 14.208	-14 12 43.79	
306	1986QF3	10190	9	1.323263	22 52 13.983	-14 12 46.26	
307	1986QF3	10206	9	2.362499	22 51 27.553	-14 21 05.10	
308	1986QF3	10206	9	2.366665	22 51 27.369	-14 21 06.91	
309	1986QF3	10206	9	2.370832	22 51 27.182	-14 21 08.71	
310	1986QF3	10303	9	7.308680	22 47 43.987	-14 59 12.42	
311	1986QF3	10303	9	7.313541	22 47 43.759	-14 59 15.00	
312	1986QF3	10303	9	7.318401	22 47 43.528	-14 59 17.13	
313	1986QE3	10158	8	29.277777	22 54 11.022	-13 51 05.43	
314	1986QE3	10158	8	29.283333	22 54 10.671	-13 51 05.90	
315	1986QE3	10158	8	29.288887	22 54 10.334	-13 51 06.23	
316	1986QE3	10175	8	31.356596	22 52 0.088	-13 53 20.52	
317	1986QE3	10175	8	31.361458	22 51 59.783	-13 53 20.79	
318	1986QE3	10175	8	31.366318	22 51 59.472	-13 53 21.01	
319	1986QE3	10190	9	1.313541	22 50 59.248	-13 54 17.57	
320	1986QE3	10190	9	1.318401	22 50 58.939	-13 54 18.00	
321	1986QE3	10190	9	1.323263	22 50 58.633	-13 54 18.42	
322	1986QE3	10206	9	2.362499	22 49 52.324	-13 55 15.59	
323	1986QE3	10206	9	2.366665	22 49 52.067	-13 55 15.86	
324	1986QE3	10206	9	2.370832	22 49 51.809	-13 55 16.21	
325	1986QE3	10237	9	4.300346	22 47 48.159	-13 56 48.59	
326	1986QE3	10237	9	4.305902	22 47 47.789	-13 56 48.85	
327	1986QE3	10237	9	4.310762	22 47 47.481	-13 56 49.03	
328	1986QE3	10302	9	7.292707	22 44 36.177	-13 58 36.16	
329	1986QE3	10302	9	7.297569	22 44 35.854	-13 58 36.19	
330	1986QE3	10302	9	7.302429	22 44 35.526	-13 58 36.45	
331	1986QE3	10386	9	11.320486	22 40 20.389	-13 59 34.45	
332	1986QE3	10386	9	11.325346	22 40 20.066	-13 59 34.49	
333	1986QE3	10386	9	11.330208	22 40 19.757	-13 59 34.58	
334	1986QD3	10158	8	29.277777	22 53 59.609	-13 50 23.14	
335	1986QD3	10158	8	29.283333	22 53 59.261	-13 50 23.68	
336	1986QD3	10158	8	29.288887	22 53 58.915	-13 50 24.55	
337	1986QD3	10175	8	31.356596	22 51 47.311	-13 53 50.17	
338	1986QD3	10175	8	31.361458	22 51 46.993	-13 53 50.73	
339	1986QD3	10175	8	31.366318	22 51 46.674	-13 53 51.29	
340	1986QD3	10190	9	1.313541	22 50 46.178	-13 55 18.00	
341	1986QD3	10190	9	1.318401	22 50 45.871	-13 55 18.45	
342	1986QD3	10190	9	1.323263	22 50 45.567	-13 55 18.84	
343	1986QD3	10206	9	2.362499	22 49 39.082	-13 56 47.23	
344	1986QD3	10206	9	2.366665	22 49 38.816	-13 56 47.47	
345	1986QD3	10206	9	2.370832	22 49 38.558	-13 56 47.75	
346	1986QD3	10237	9	4.300346	22 47 35.389	-13 59 14.43	
347	1986QD3	10237	9	4.305902	22 47 35.030	-13 59 14.89	
348	1986QD3	10237	9	4.310762	22 47 34.728	-13 59 15.25	
349	1986QD3	10302	9	7.292707	22 44 26.325	-14 02 09.65	
350	1986QD3	10302	9	7.297569	22 44 26.026	-14 02 09.82	

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M	"
251	1986QX1	10370	9	10.374304	22	37	44.047	-12	38	15.57		
252	1986QX1	10370	9	10.378471	22	37	43.803	-12	38	16.31		
253	1986QX1	10387	9	11.339930	22	36	48.274	-12	41	13.28		
254	1986QX1	10387	9	11.344791	22	36	48.000	-12	41	14.17		
255	1986QX1	10387	9	11.349651	22	36	47.713	-12	41	15.27		
256	1986QX1	10427	9	14.377083	22	33	58.924	-12	49	37.20		
257	1986QX1	10427	9	14.381248	22	33	58.691	-12	49	37.75		
258	1986QX1	10427	9	14.385414	22	33	58.459	-12	49	38.39		
259	1986QW1	10133	8	27.172737	22	52	7.159	-10	12	39.14		
260	1986QW1	10133	8	27.178123	22	52	6.908	-10	12	41.00		
261	1986QW1	10133	8	27.183910	22	52	6.650	-10	12	42.56		
262	1986QW1	11157	8	29.256248	22	50	35.580	-10	22	13.09		
263	1986QW1	11157	8	29.262152	22	50	35.305	-10	22	14.71		
264	1986QW1	11157	8	29.268055	22	50	35.035	-10	22	16.33		
265	1986QW1	10188	9	1.245485	22	48	22.522	-10	35	51.52		
266	1986QW1	10188	9	1.250347	22	48	22.298	-10	35	52.76		
267	1986QW1	10188	9	1.255207	22	48	22.087	-10	35	54.00		
268	1986QW1	10204	9	2.296873	22	47	35.340	-10	40	35.38		
269	1986QW1	10204	9	2.301735	22	47	35.123	-10	40	36.67		
270	1986QW1	10204	9	2.306597	22	47	34.907	-10	40	38.01		
271	1986QW1	10218	9	3.276041	22	46	51.511	-10	44	57.56		
272	1986QW1	10218	9	3.280901	22	46	51.289	-10	44	58.93		
273	1986QW1	10218	9	3.285763	22	46	51.078	-10	45	00.16		
274	1986QW1	10236	9	4.282986	22	46	6.509	-10	49	24.77		
275	1986QW1	10236	9	4.287846	22	46	6.296	-10	49	26.19		
276	1986QW1	10236	9	4.292881	22	46	6.070	-10	49	27.65		
277	1986QW1	10283	9	6.366665	22	44	33.491	-10	58	28.77		
278	1986QW1	10283	9	6.370832	22	44	33.303	-10	58	29.82		
279	1986QW1	10283	9	6.374998	22	44	33.144	-10	58	31.00		
280	1986QW1	10304	9	7.324652	22	43	51.118	-11	02	33.79		
281	1986QW1	10304	9	7.329514	22	43	50.894	-11	02	35.57		
282	1986QW1	10304	9	7.334373	22	43	50.709	-11	02	36.22		
283	1986QW1	10346	9	9.260763	22	42	26.324	-11	10	37.84		
284	1986QW1	10346	9	9.265623	22	42	26.110	-11	10	39.03		
285	1986QW1	10346	9	9.270485	22	42	25.909	-11	10	40.22		
286	1986QW1	10350	9	9.334026	22	42	23.044	-11	10	55.62		
287	1986QW1	10350	9	9.339582	22	42	22.819	-11	10	57.03		
288	1986QW1	10350	9	9.345139	22	42	22.580	-11	10	58.47		
289	1986QW1	10370	9	10.369444	22	41	38.250	-11	15	06.03		
290	1986QW1	10370	9	10.374304	22	41	38.041	-11	15	07.13		
291	1986QW1	10370	9	10.378471	22	41	37.865	-11	15	08.25		
292	1986QW1	10387	9	11.339930	22	40	56.762	-11	18	56.79		
293	1986QW1	10387	9	11.344791	22	40	56.549	-11	18	58.00		
294	1986QW1	10387	9	11.349651	22	40	56.335	-11	18	59.09		
295	1986QK3	10303	9	7.308680	22	51	33.932	-14	48	04.65		
296	1986QK3	10303	9	7.313541	22	51	33.716	-14	48	07.00		
297	1986QK3	10303	9	7.318401	22	51	33.492	-14	48	09.30		
298	1986QF3	10158	8	29.277777	22	54	26.904	-13	48	02.25		
299	1986QF3	10158	8	29.283333	22	54	26.659	-13	48	04.79		
300	1986QF3	10158	8	29.288887	22	54	26.443	-13	48	07.74		

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M	"
201	1986QF1	10175	8	31.366318	22	45	44.364	-13	55	45.30		
202	1986QF1	11188	9	1.260763	22	44	48.181	-13	58	03.89		
203	1986QF1	11188	9	1.265623	22	44	47.867	-13	58	04.42		
204	1986QF1	11188	9	1.270485	22	44	47.549	-13	58	05.00		
205	1986QF1	10190	9	1.313541	22	44	44.671	-13	58	11.51		
206	1986QF1	10190	9	1.318401	22	44	44.381	-13	58	12.26		
207	1986QF1	10190	9	1.323263	22	44	44.088	-13	58	13.00		
208	1986QF1	10282	9	6.324652	22	39	27.328	-14	09	27.78		
209	1986QF1	10282	9	6.329514	22	39	27.001	-14	09	28.27		
210	1986QF1	10282	9	6.334373	22	39	26.707	-14	09	28.72		
211	1986QG1	11188	9	1.260763	22	45	37.110	-14	10	01.27		
212	1986QG1	11188	9	1.265623	22	45	36.838	-14	10	03.41		
213	1986QG1	11188	9	1.270485	22	45	36.571	-14	10	05.56		
214	1986QG1	10190	9	1.313541	22	45	34.031	-14	10	22.23		
215	1986QG1	10190	9	1.318401	22	45	33.761	-14	10	24.45		
216	1986QG1	10190	9	1.323263	22	45	33.491	-14	10	26.54		
217	1986QX1	10133	8	27.172337	22	52	12.107	-11	42	44.41		
218	1986QX1	10133	8	27.178123	22	52	11.754	-11	42	45.39		
219	1986QX1	10133	8	27.183910	22	52	11.397	-11	42	47.38		
220	1986QX1	11157	8	29.256248	22	50	4.559	-11	51	50.72		
221	1986QX1	11157	8	29.262152	22	50	4.195	-11	51	52.24		
222	1986QX1	11157	8	29.268055	22	50	3.832	-11	51	53.75		
223	1986QX1	10188	9	1.245485	22	46	59.680	-12	04	31.45		
224	1986QX1	10188	9	1.250347	22	46	59.364	-12	04	32.95		
225	1986QX1	10188	9	1.255207	22	46	59.047	-12	04	34.09		
226	1986QX1	10204	9	2.296873	22	45	54.232	-12	08	51.31		
227	1986QX1	10204	9	2.301735	22	45	53.930	-12	08	52.15		
228	1986QX1	10204	9	2.306597	22	45	53.632	-12	08	53.34		
229	1986QX1	10218	9	3.276041	22	44	53.588	-12	12	47.51		
230	1986QX1	10218	9	3.280901	22	44	53.284	-12	12	48.66		
231	1986QX1	10218	9	3.285763	22	44	52.987	-12	12	49.82		
232	1986QX1	10236	9	4.282986	22	43	51.333	-12	16	45.45		
233	1986QX1	10236	9	4.287846	22	43	51.021	-12	16	46.64		
234	1986QX1	10236	9	4.292881	22	43	50.701	-12	16	47.82		
235	1986QX1	10282	9	6.324652	22	41	45.913	-12	24	28.18		
236	1986QX1	10282	9	6.329514	22	41	45.620	-12	24	29.36		
237	1986QX1	10282	9	6.334373	22	41	45.321	-12	24	30.41		
238	1986QX1	10283	9	6.366665	22	41	43.260	-12	24	36.48		
239	1986QX1	10283	9	6.370832	22	41	43.002	-12	24	37.45		
240	1986QX1	10283	9	6.374998	22	41	42.744	-12	24	38.36		
241	1986QX1	10304	9	7.324652	22	40	45.195	-12	28	03.74		
242	1986QX1	10304	9	7.329514	22	40	44.892	-12	28	04.70		
243	1986QX1	10304	9	7.334373	22	40	44.589	-12	28	05.64		
244	1986QX1	10346	9	9.260763	22	38	49.566	-12	34	41.78		
245	1986QX1	10346	9	9.265623	22	38	49.264	-12	34	42.66		
246	1986QX1	10346	9	9.270485	22	38	48.982	-12	34	43.40		
247	1986QX1	10350	9	9.334026	22	38	45.073	-12	34	55.52		
248	1986QX1	10350	9	9.339582	22	38	44.735	-12	34	56.83		
249	1986QX1	10350	9	9.345139	22	38	44.401	-12	34	58.10		
250	1986QX1	10370	9	10.369444	22	37	44.333	-12	38	14.75		

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H M S	DELTA 1950 ° ' "	RESIDUALS M "
151	1674 GROENEVELD	10346	9	9.260763	22 41 33.125	-12 02 18.60	- .0 - 1
152	1674 GROENEVELD	10346	9	9.265623	22 41 32.890	-12 02 20.23	- .0 - 1
153	1674 GROENEVELD	10346	9	9.270485	22 41 32.678	-12 02 21.47	- .0 - 1
154	1674 GROENEVELD	10350	9	9.334026	22 41 29.919	-12 02 38.10	- .0 - 1
155	1674 GROENEVELD	10350	9	9.339582	22 41 29.675	-12 02 39.49	- .0 - 1
156	1674 GROENEVELD	10350	9	9.345139	22 41 29.418	-12 02 41.00	- .0 - 1
157	1674 GROENEVELD	10370	9	10.369444	22 40 44.884	-12 07 11.43	- .1 - 1
158	1674 GROENEVELD	10370	9	10.374304	22 40 44.690	-12 07 13.03	- .1 - 1
159	1674 GROENEVELD	10370	9	10.378471	22 40 44.522	-12 07 13.86	- .1 - 1
160	1674 GROENEVELD	10387	9	11.339930	22 40 3.065	-12 11 23.67	- .1 - 1
161	1674 GROENEVELD	10387	9	11.344791	22 40 2.860	-12 11 24.92	- .1 - 1
162	1674 GROENEVELD	10387	9	11.349651	22 40 2.643	-12 11 26.36	- .1 - 1
163	1674 GROENEVELD	10420	9	13.357635	22 38 37.029	-12 19 54.22	- .1 - 1
164	1674 GROENEVELD	10420	9	13.361805	22 38 36.852	-12 19 55.33	- .1 - 1
165	1674 GROENEVELD	10420	9	13.365971	22 38 36.678	-12 19 56.48	- .1 - 1
166	1674 GROENEVELD	10427	9	14.377083	22 37 54.120	-12 24 06.68	- .1 0
167	1674 GROENEVELD	10427	9	14.381248	22 37 53.942	-12 24 07.61	- .1 0
168	1674 GROENEVELD	10427	9	14.385414	22 37 53.771	-12 24 08.65	- .1 0
169	2682 SOROMUNDI	10303	9	7.308680	22 50 33.536	-14 25 00.36	- .0 0
170	2682 SOROMUNDI	10303	9	7.313541	22 50 33.313	-14 25 02.92	- .0 0
171	2682 SOROMUNDI	10303	9	7.318401	22 50 33.103	-14 25 05.55	- .0 0
172	2911 1938 GJ	10304	9	7.324652	22 47 4.548	-10 57 13.61	+ .0 0
173	2911 1938 GJ	10304	9	7.329514	22 47 4.329	-10 57 15.62	+ .0 0
174	2911 1938 GJ	10304	9	7.334373	22 47 4.108	-10 57 17.67	+ .0 0
175	2911 1938 GJ	10350	9	9.334026	22 45 34.131	-11 11 58.06	- .1 - 1
176	2911 1938 GJ	10350	9	9.339582	22 45 33.880	-11 12 00.53	- .1 - 1
177	2911 1938 GJ	10350	9	9.345139	22 45 33.636	-11 12 03.00	- .1 - 1
178	2911 1938 GJ	10387	9	11.339930	22 44 5.270	-11 26 23.32	- .1 - 1
179	2911 1938 GJ	10387	9	11.344791	22 44 4.994	-11 26 25.41	- .1 - 1
180	2911 1938 GJ	10387	9	11.349651	22 44 4.893	-11 26 27.57	- .1 - 1
181	2911 1938 GJ	10420	9	13.357635	22 42 37.408	-11 40 33.09	- .1 - 1
182	2911 1938 GJ	10420	9	13.361805	22 42 37.232	-11 40 34.81	- .1 - 1
183	2911 1938 GJ	10420	9	13.365971	22 42 37.060	-11 40 36.39	- .1 - 1
184	2911 1938 GJ	10427	9	14.377083	22 41 53.794	-11 47 33.07	- .1 - 1
185	2911 1938 GJ	10427	9	14.381248	22 41 53.615	-11 47 34.78	- .1 - 1
186	2911 1938 GJ	10427	9	14.385414	22 41 53.435	-11 47 36.50	- .1 - 1
187	3009 COVENTRY	11188	9	1.260763	22 42 48.902	-14 02 51.69	- .0 - 1
188	3009 COVENTRY	11188	9	1.265623	22 42 48.606	-14 02 51.90	- .0 - 1
189	3009 COVENTRY	11188	9	1.270485	22 42 48.312	-14 02 52.13	- .0 - 1
190	3009 COVENTRY	10282	9	6.324652	22 38 1.138	-14 03 41.39	- .0 0
191	3009 COVENTRY	10282	9	6.329514	22 38 0.866	-14 03 41.55	- .0 0
192	3009 COVENTRY	10282	9	6.334373	22 38 0.598	-14 03 41.60	- .0 0
193	3032 EVANS	10282	9	6.324652	22 36 49.860	-13 59 11.02	- .0 - 1
194	3032 EVANS	10282	9	6.329514	22 36 49.630	-13 59 12.80	- .0 - 1
195	3032 EVANS	10282	9	6.334373	22 36 49.396	-13 59 14.61	- .0 - 1
196	1986QB1	10282	9	6.324652	22 36 20.035	-14 10 22.51	
197	1986QB1	10282	9	6.329514	22 36 19.799	-14 10 23.83	
198	1986QB1	10282	9	6.334373	22 36 19.542	-14 10 25.01	
199	1986QF1	10175	8	31.356596	22 45 44.989	-13 55 43.87	
200	1986QF1	10175	8	31.361458	22 45 44.674	-13 55 44.58	

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H M S	DELTA 1950 ° ' "	RESIDUALS M	"
101	1586 THIELE	10282	9	6.329514	22 40 40.002	-12 16 32.19	- .0	0
102	1586 THIELE	10282	9	6.334373	22 40 39.740	-12 16 34.33	- .0	0
103	1586 THIELE	10283	9	6.366665	22 40 37.988	-12 16 45.66	- .0	0
104	1586 THIELE	10283	9	6.370832	22 40 37.758	-12 16 47.53	- .0	0
105	1586 THIELE	10283	9	6.374998	22 40 37.536	-12 16 48.92	- .0	0
106	1586 THIELE	10346	9	9.260763	22 38 5.535	-12 34 44.13	- .1	- 1
107	1586 THIELE	10346	9	9.265623	22 38 5.273	-12 34 45.78	- .1	- 1
108	1586 THIELE	10346	9	9.270485	22 38 5.035	-12 34 47.44	- .1	- 1
109	1586 THIELE	10350	9	9.334026	22 38 1.605	-12 35 10.11	- .1	- 1
110	1586 THIELE	10350	9	9.339582	22 38 1.315	-12 35 12.10	- .1	- 1
111	1586 THIELE	10350	9	9.345139	22 38 1.019	-12 35 14.12	- .1	- 1
112	1586 THIELE	10370	9	10.369444	22 37 7.808	-12 41 24.45	- .1	- 1
113	1586 THIELE	10370	9	10.374304	22 37 7.564	-12 41 25.76	- .1	- 1
114	1586 THIELE	10370	9	10.378471	22 37 7.378	-12 41 27.13	- .1	- 1
115	1586 THIELE	10386	9	11.320486	22 36 18.868	-12 47 01.55	- .1	- 1
116	1586 THIELE	10386	9	11.325346	22 36 18.617	-12 47 03.31	- .1	- 1
117	1586 THIELE	10386	9	11.330208	22 36 18.364	-12 47 04.75	- .1	- 1
118	1586 THIELE	10387	9	11.339930	22 36 17.841	-12 47 08.32	- .1	- 1
119	1586 THIELE	10387	9	11.344791	22 36 17.598	-12 47 10.02	- .1	- 1
120	1586 THIELE	10387	9	11.349651	22 36 17.362	-12 47 11.56	- .1	- 1
121	1586 THIELE	10420	9	13.357635	22 34 35.697	-12 58 42.48	- .1	- 1
122	1586 THIELE	10420	9	13.361805	22 34 35.501	-12 58 44.05	- .1	- 1
123	1586 THIELE	10420	9	13.365971	22 34 35.303	-12 58 45.31	- .1	- 1
124	1586 THIELE	10427	9	14.377083	22 33 45.029	-13 04 23.40	- .1	- 1
125	1586 THIELE	10427	9	14.381248	22 33 44.821	-13 04 24.88	- .1	- 1
126	1586 THIELE	10427	9	14.385414	22 33 44.607	-13 04 26.41	- .1	- 1
127	1674 GROENEVELD	10133	8	27.172337	22 51 5.405	-11 00 56.12	- .0	0
128	1674 GROENEVELD	10133	8	27.178123	22 51 5.143	-11 00 57.80	- .0	0
129	1674 GROENEVELD	10133	8	27.183910	22 51 4.887	-11 00 59.34	- .0	0
130	1674 GROENEVELD	11157	8	29.256248	22 49 35.838	-11 10 57.70	+ .0	0
131	1674 GROENEVELD	11157	8	29.262152	22 49 35.569	-11 10 59.43	+ .0	0
132	1674 GROENEVELD	11157	8	29.268055	22 49 35.309	-11 11 01.00	+ .0	0
133	1674 GROENEVELD	10188	9	1.245485	22 47 25.556	-11 25 16.32	+ .0	0
134	1674 GROENEVELD	10188	9	1.250347	22 47 25.328	-11 25 18.00	+ .0	0
135	1674 GROENEVELD	10188	9	1.255207	22 47 25.119	-11 25 19.29	+ .0	0
136	1674 GROENEVELD	10204	9	2.296873	22 46 39.317	-11 30 15.76	+ .0	0
137	1674 GROENEVELD	10204	9	2.301735	22 46 39.080	-11 30 17.43	+ .0	0
138	1674 GROENEVELD	10204	9	2.306597	22 46 38.862	-11 30 18.65	+ .0	0
139	1674 GROENEVELD	10218	9	3.276041	22 45 56.211	-11 34 53.31	+ .0	0
140	1674 GROENEVELD	10218	9	3.280901	22 45 55.982	-11 34 55.05	+ .0	0
141	1674 GROENEVELD	10218	9	3.285763	22 45 55.749	-11 34 56.43	+ .0	0
142	1674 GROENEVELD	10236	9	4.282986	22 45 11.743	-11 39 36.51	+ .0	0
143	1674 GROENEVELD	10236	9	4.287846	22 45 11.560	-11 39 37.93	+ .0	0
144	1674 GROENEVELD	10236	9	4.292881	22 45 11.346	-11 39 39.29	+ .0	0
145	1674 GROENEVELD	10283	9	6.366665	22 43 39.795	-11 49 14.39	+ .0	0
146	1674 GROENEVELD	10283	9	6.370832	22 43 39.623	-11 49 15.59	+ .0	0
147	1674 GROENEVELD	10283	9	6.374998	22 43 39.444	-11 49 16.76	+ .0	0
148	1674 GROENEVELD	10304	9	7.324652	22 42 57.767	-11 53 38.01	- .0	0
149	1674 GROENEVELD	10304	9	7.329514	22 42 57.558	-11 53 39.32	- .0	0
150	1674 GROENEVELD	10304	9	7.334373	22 42 57.348	-11 53 40.47	- .0	0

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M	"
51	1111 REINMUTHIA	11157	8	29.268055	22	46	46.008	-10	37	03.92	+ .0	0
52	1111 REINMUTHIA	10188	9	1.245485	22	44	33.555	-10	54	47.57	+ .0	0
53	1111 REINMUTHIA	10188	9	1.250347	22	44	33.342	-10	54	49.44	+ .0	0
54	1111 REINMUTHIA	10188	9	1.255207	22	44	33.125	-10	54	51.15	+ .0	0
55	1111 REINMUTHIA	10204	9	2.296873	22	43	46.333	-11	01	01.09	- .0	0
56	1111 REINMUTHIA	10204	9	2.301735	22	43	46.094	-11	01	02.79	- .0	0
57	1111 REINMUTHIA	10204	9	2.306597	22	43	45.877	-11	01	04.50	- .0	0
58	1111 REINMUTHIA	10218	9	3.276041	22	43	2.456	-11	06	46.56	- .0	0
59	1111 REINMUTHIA	10218	9	3.280901	22	43	2.241	-11	06	48.15	- .0	0
60	1111 REINMUTHIA	10218	9	3.285763	22	43	2.018	-11	06	49.89	- .0	0
61	1111 REINMUTHIA	10236	9	4.282986	22	42	17.220	-11	12	38.70	- .0	0
62	1111 REINMUTHIA	10236	9	4.287846	22	42	17.026	-11	12	40.36	- .0	0
63	1111 REINMUTHIA	10236	9	4.292881	22	42	16.793	-11	12	42.05	- .0	0
64	1111 REINMUTHIA	10283	9	6.366665	22	40	43.962	-11	24	39.01	- .0	0
65	1111 REINMUTHIA	10283	9	6.370832	22	40	43.785	-11	24	40.48	- .0	0
66	1111 REINMUTHIA	10283	9	6.374998	22	40	43.588	-11	24	42.06	- .0	0
67	1111 REINMUTHIA	10346	9	9.260763	22	38	36.249	-11	40	53.06	- .1	- 1
68	1111 REINMUTHIA	10346	9	9.265623	22	38	36.044	-11	40	54.28	- .1	- 1
69	1111 REINMUTHIA	10346	9	9.270485	22	38	35.808	-11	40	55.90	- .1	- 1
70	1111 REINMUTHIA	10350	9	9.334026	22	38	32.914	-11	41	16.87	- .1	- 1
71	1111 REINMUTHIA	10350	9	9.339582	22	38	32.661	-11	41	18.67	- .1	- 1
72	1111 REINMUTHIA	10350	9	9.345139	22	38	32.418	-11	41	20.34	- .1	- 1
73	1111 REINMUTHIA	10387	9	11.339930	22	37	6.022	-11	52	09.00	- .1	- 1
74	1111 REINMUTHIA	10387	9	11.344791	22	37	5.831	-11	52	10.12	- .1	- 1
75	1111 REINMUTHIA	10387	9	11.349651	22	37	5.646	-11	52	11.89	- .1	- 1
76	1111 REINMUTHIA	10420	9	13.357635	22	35	40.613	-12	02	41.38	- .1	- 1
77	1111 REINMUTHIA	10420	9	13.361805	22	35	40.434	-12	02	42.50	- .1	- 1
78	1111 REINMUTHIA	10420	9	13.365971	22	35	40.259	-12	02	43.57	- .1	- 1
79	1111 REINMUTHIA	10427	9	14.377083	22	34	58.300	-12	07	51.66	- .1	- 1
80	1111 REINMUTHIA	10427	9	14.381248	22	34	58.116	-12	07	53.00	- .1	- 1
81	1111 REINMUTHIA	10427	9	14.385414	22	34	57.971	-12	07	54.31	- .1	- 1
82	1586 THIELE	10133	8	27.172337	22	49	40.161	-11	09	30.21	+ .0	0
83	1586 THIELE	10133	8	27.178123	22	49	39.854	-11	09	32.62	+ .0	0
84	1586 THIELE	10133	8	27.183910	22	49	39.531	-11	09	35.00	+ .0	0
85	1586 THIELE	11157	8	29.256248	22	47	50.698	-11	23	32.13	+ .1	0
86	1586 THIELE	11157	8	29.262152	22	47	50.407	-11	23	34.27	+ .1	0
87	1586 THIELE	11157	8	29.268055	22	47	50.107	-11	23	37.17	+ .1	0
88	1586 THIELE	10188	9	1.245485	22	45	11.756	-11	43	31.15	+ .0	0
89	1586 THIELE	10188	9	1.250347	22	45	11.493	-11	43	33.09	+ .0	0
90	1586 THIELE	10188	9	1.255207	22	45	11.231	-11	43	35.02	+ .0	0
91	1586 THIELE	10204	9	2.296873	22	44	15.422	-11	50	27.37	+ .0	0
92	1586 THIELE	10204	9	2.301735	22	44	15.159	-11	50	29.44	+ .0	0
93	1586 THIELE	10204	9	2.306597	22	44	14.919	-11	50	31.56	+ .0	- 1
94	1586 THIELE	10218	9	3.276041	22	43	23.132	-11	56	53.00	+ .0	0
95	1586 THIELE	10218	9	3.280901	22	43	22.866	-11	56	55.24	+ .0	0
96	1586 THIELE	10218	9	3.285763	22	43	22.602	-11	56	56.93	+ .0	0
97	1586 THIELE	10236	9	4.282986	22	42	29.195	-12	03	26.00	- .0	0
98	1586 THIELE	10236	9	4.287846	22	42	28.925	-12	03	27.56	- .0	0
99	1586 THIELE	10236	9	4.292881	22	42	28.654	-12	03	29.94	- .0	0
100	1586 THIELE	10282	9	6.324652	22	40	40.256	-12	16	30.27	- .0	0

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS "	'
1	383 JANINA	10133	8	27.172337	22	50	9.516	-11	23	44.72	+ .0	0
2	383 JANINA	10133	8	27.178123	22	50	9.275	-11	23	46.43	+ .0	0
3	383 JANINA	10133	8	27.183910	22	50	9.000	-11	23	48.32	+ .0	0
4	383 JANINA	11157	8	29.256248	22	48	37.055	-11	34	18.47	+ .1	0
5	383 JANINA	11157	8	29.262152	22	48	36.791	-11	34	20.23	+ .1	0
6	383 JANINA	11157	8	29.268055	22	48	36.519	-11	34	22.04	+ .1	0
7	383 JANINA	10188	9	1.245485	22	46	22.120	-11	49	21.64	+ .1	0
8	383 JANINA	10188	9	1.250347	22	46	21.893	-11	49	22.94	+ .1	0
9	383 JANINA	10188	9	1.255207	22	46	21.675	-11	49	24.87	+ .1	0
10	383 JANINA	10204	9	2.296873	22	45	34.157	-11	54	36.42	+ .0	0
11	383 JANINA	10204	9	2.301735	22	45	33.920	-11	54	38.32	+ .0	0
12	383 JANINA	10204	9	2.306597	22	45	33.687	-11	54	39.78	+ .0	0
13	383 JANINA	10218	9	3.276041	22	44	49.477	-11	59	28.44	+ .0	0
14	383 JANINA	10218	9	3.280901	22	44	49.253	-11	59	30.17	+ .0	0
15	383 JANINA	10218	9	3.285763	22	44	49.021	-11	59	31.32	+ .0	0
16	383 JANINA	10236	9	4.282986	22	44	3.363	-12	04	25.21	+ .0	0
17	383 JANINA	10236	9	4.287846	22	44	3.167	-12	04	26.59	+ .0	0
18	383 JANINA	10236	9	4.292861	22	44	2.947	-12	04	28.15	+ .0	0
19	383 JANINA	10282	9	6.324652	22	42	29.914	-12	14	19.13	- .0	0
20	383 JANINA	10282	9	6.329514	22	42	29.709	-12	14	20.74	- .0	0
21	383 JANINA	10282	9	6.334373	22	42	29.486	-12	14	22.19	- .0	0
22	383 JANINA	10283	9	6.366665	22	42	27.993	-12	14	30.65	- .0	0
23	383 JANINA	10283	9	6.370832	22	42	27.834	-12	14	31.93	- .0	0
24	383 JANINA	10283	9	6.374998	22	42	27.643	-12	14	33.38	- .0	0
25	383 JANINA	10304	9	7.324652	22	41	44.396	-12	19	03.69	- .0	0
26	383 JANINA	10304	9	7.329514	22	41	44.155	-12	19	05.36	- .0	0
27	383 JANINA	10304	9	7.334373	22	41	43.934	-12	19	06.74	- .0	0
28	383 JANINA	10346	9	9.260763	22	40	16.605	-12	28	07.03	- .1	0
29	383 JANINA	10346	9	9.265623	22	40	16.377	-12	28	08.39	- .1	0
30	383 JANINA	10346	9	9.270485	22	40	16.157	-12	28	09.88	- .1	0
31	383 JANINA	10350	9	9.334026	22	40	13.229	-12	28	26.15	- .1	0
32	383 JANINA	10350	9	9.339582	22	40	12.965	-12	28	28.06	- .1	0
33	383 JANINA	10350	9	9.345139	22	40	12.711	-12	28	29.61	- .1	0
34	383 JANINA	10370	9	10.369444	22	39	26.636	-12	33	09.87	- .1	- 1
35	383 JANINA	10370	9	10.374304	22	39	26.437	-12	33	10.71	- .1	- 1
36	383 JANINA	10370	9	10.378471	22	39	26.234	-12	33	11.71	- .1	- 1
37	383 JANINA	10387	9	11.339930	22	38	43.340	-12	37	30.04	- .1	- 1
38	383 JANINA	10387	9	11.344791	22	38	43.142	-12	37	31.32	- .1	- 1
39	383 JANINA	10387	9	11.349651	22	38	42.915	-12	37	32.57	- .1	- 1
40	383 JANINA	10420	9	13.357635	22	37	14.473	-12	46	15.73	- .1	- 1
41	383 JANINA	10420	9	13.361805	22	37	14.324	-12	46	16.70	- .1	- 1
42	383 JANINA	10420	9	13.365971	22	37	14.156	-12	46	17.49	- .1	- 1
43	383 JANINA	10427	9	14.377083	22	36	30.307	-12	50	33.38	- .1	- 1
44	383 JANINA	10427	9	14.381248	22	36	30.136	-12	50	34.32	- .1	- 1
45	383 JANINA	10427	9	14.385414	22	36	29.954	-12	50	35.38	- .1	- 1
46	1111 REINMUTHIA	10133	8	27.172337	22	48	18.008	-10	24	33.22	- .0	+ 1
47	1111 REINMUTHIA	10133	8	27.178123	22	48	17.761	-10	24	35.40	- .0	+ 1
48	1111 REINMUTHIA	10133	8	27.183910	22	48	17.491	-10	24	37.67	- .0	+ 1
49	1111 REINMUTHIA	11157	8	29.256248	22	46	46.540	-10	36	59.94	+ .0	0
50	1111 REINMUTHIA	11157	8	29.262152	22	46	46.292	-10	37	01.61	+ .0	0

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS				DEPENDENCES		
				S	**	S	**	S	**	S	**			
1	2	3	165335	+45.989	55.88	+0.035	+0.26	+0.032	-0.02	+0.028	-0.18	+0.568021	+0.568686	+0.569410
			165325	+28.910	58.30	-0.051	-0.53	-0.049	-0.29	-0.045	-0.11	+0.071707	+0.071961	+0.072280
			165355	+22.790	49.56	+0.042	+0.62	+0.043	+0.64	+0.043	+0.55	+0.100058	+0.099982	+0.099919
			165382	+49.317	46.96	+0.017	+0.05	+0.014	-0.19	+0.011	-0.29	-0.152994	-0.153611	-0.154338
			165388	+28.359	58.80	-0.043	-0.40	-0.041	-0.14	-0.037	+0.03	+0.413208	+0.412981	+0.412729
4	5	6	165310	+08.313	33.25	-0.028	-0.33	-0.023	-0.21	-0.021	-0.34	+0.341733	+0.342379	+0.343069
			165322	+07.788	56.18	+0.067	+0.75	+0.056	+0.48	+0.050	+0.77	+0.141912	+0.142264	+0.142573
			165326	+29.502	22.67	-0.040	-0.30	-0.038	-0.20	+0.032	-0.31	-0.078912	-0.078666	-0.078384
			165337	+53.668	29.54	+0.010	-0.12	+0.016	-0.06	+0.011	-0.12	+0.128149	+0.127867	+0.127572
			165357	+36.708	23.20	-0.009	-0.00	-0.011	-0.01	-0.008	-0.00	+0.467118	+0.466155	+0.465170
7	8	9	165335	+45.989	55.88	-0.024	+0.21	-0.015	+0.48	-0.009	+0.33	+0.063495	+0.062761	+0.061981
			165322	+07.788	56.18	+0.037	-0.07	+0.017	-0.47	+0.013	-0.27	+0.116907	+0.116598	+0.116136
			165285	+36.164	47.10	-0.019	-0.27	-0.003	-0.08	-0.006	-0.13	+0.279944	+0.280512	+0.281064
			165310	+08.313	33.25	+0.014	+0.55	-0.005	+0.41	+0.003	+0.40	+0.306862	+0.307380	+0.307964
			165338	+58.121	56.80	-0.007	-0.42	+0.006	-0.35	-0.001	-0.33	+0.232801	+0.232759	+0.232854
10	11	12	165260	+43.997	27.61	-0.007	+0.34	-0.010	+0.37	-0.009	+0.28	-0.145541	-0.145467	-0.145323
			165285	+36.164	47.10	+0.002	-0.47	+0.004	-0.45	-0.002	-0.31	+0.153614	+0.153783	+0.153931
			165322	+07.788	56.18	+0.005	-0.07	+0.006	-0.09	+0.007	-0.08	+0.259535	+0.258318	+0.257186
			165304	+22.857	14.56	-0.016	+0.47	-0.020	+0.55	-0.022	+0.44	+0.455430	+0.455742	+0.456000
			165282	+29.006	07.60	+0.017	-0.28	+0.021	-0.37	+0.025	-0.32	+0.276961	+0.277624	+0.278206
13	14	15	165322	+07.788	56.18	-0.010	+0.31	-0.018	+0.20	-0.015	+0.18	+0.142709	+0.141926	+0.141182
			165285	+36.164	47.10	+0.001	+0.18	+0.007	+0.37	+0.003	+0.38	+0.375284	+0.375533	+0.375918
			165283	+30.279	21.48	-0.013	+0.55	-0.020	+0.51	-0.020	+0.49	+0.315718	+0.316212	+0.316605
			165310	+08.313	33.25	+0.013	-0.44	+0.024	-0.29	+0.021	-0.27	+0.302917	+0.302572	+0.302123
			165282	+29.006	07.60	+0.009	-0.59	+0.007	-0.79	+0.011	-0.78	+0.163373	+0.163757	+0.164173
16	17	18	165316	+48.494	49.68	+0.004	-0.32	-0.000	-0.27	+0.004	-0.19	+0.118077	+0.117453	+0.116748
			165285	+36.164	47.10	-0.020	+0.45	-0.021	+0.30	-0.020	+0.21	+0.056229	+0.056087	+0.055919
			165255	+12.374	44.64	+0.017	-0.34	+0.019	-0.21	+0.017	-0.15	+0.160757	+0.161191	+0.161688
			165283	+30.279	21.48	-0.017	+0.07	-0.023	-0.01	-0.016	-0.01	+0.385040	+0.385468	+0.385942
			165304	+22.857	14.56	+0.016	+0.14	+0.025	+0.19	+0.015	+0.14	+0.279896	+0.279800	+0.279703
19	20	21	165276	+48.171	11.84	+0.010	-0.39	+0.018	-0.09	+0.020	-0.09	-0.073026	-0.072879	-0.072690
			165235	+06.680	37.39	-0.007	+0.87	-0.019	+0.38	-0.023	+0.22	-0.182374	-0.182189	-0.181914
			165218	+55.326	31.17	-0.011	-0.69	-0.009	-0.50	-0.005	-0.18	-0.051195	-0.050770	-0.050279
			165283	+30.279	21.48	-0.013	-0.00	-0.017	-0.15	-0.017	-0.01	+0.842254	+0.841560	+0.840954
			165233	+46.789	30.67	+0.021	+0.21	+0.026	+0.35	+0.025	+0.06	+0.464340	+0.464278	+0.464130
22	23	24	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	+0.174124	+0.174170	+0.174227
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.322975	+0.323509	+0.324123
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	+0.240530	+0.240554	+0.240600
			165282	+29.006	07.60	+0.017	+0.33	+0.029	+0.32	+0.023	+0.24	+0.166836	+0.166612	+0.166369
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	+0.095537	+0.095155	+0.094680
25	26	27	165247	+22.373	44.17	-0.046	+0.92	-0.043	+0.78	-0.026	+0.78	+0.424557	+0.425093	+0.425579
			165257	+24.270	54.59	+0.034	-0.89	+0.036	-0.75	+0.011	-0.68	+0.211915	+0.212339	+0.212748
			165299	+06.147	14.57	+0.014	+0.18	+0.003	+0.14	+0.025	+0.00	-0.094084	-0.094385	-0.094751
			165304	+22.857	14.56	-0.050	+0.39	-0.034	+0.33	-0.052	+0.53	+0.088153	+0.087641	+0.087254
			165282	+29.006	07.60	+0.049	-0.60	+0.038	-0.51	+0.043	-0.63	+0.369458	+0.369311	+0.369170
28	29	30	165243	+53.351	19.06	-0.026	+0.29	-0.023	+0.24	-0.028	+0.47	+0.491843	+0.491898	+0.491953
			165220	+03.162	13.35	+0.034	-0.47	+0.032	-0.41	+0.039	-0.72	+0.228562	+0.228952	+0.229392
			165228	+42.174	59.89	-0.015	+0.53	-0.016	+0.50	-0.019	+0.67	-0.039707	-0.039442	-0.039240
			165255	+12.374	44.64	-0.020	-0.47	-0.012	-0.50	-0.016	-0.41	+0.085239	+0.088043	+0.087809
			165282	+29.006	07.60	+0.025	+0.13	+0.019	+0.17	+0.024	-0.01	+0.231063	+0.230549	+0.230086

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
31	32	33	165232	+44.370	07.76	+0.020	-0.65	+0.021	-0.69	+0.018	-0.58	+0.161194	+0.162104	+0.162961
			165233	+46.789	30.67	-0.027	+0.67	-0.024	+0.67	-0.012	+0.55	+0.184077	+0.184948	+0.185802
			165246	+17.785	42.42	+0.014	+0.03	+0.006	+0.11	-0.016	+0.11	+0.198730	+0.198592	+0.198446
			165257	+24.270	54.59	-0.013	+0.18	-0.009	+0.16	+0.002	+0.12	+0.195253	+0.194391	+0.193513
			165255	+12.374	44.64	+0.005	-0.23	+0.006	-0.25	+0.008	-0.21	+0.260745	+0.259965	+0.259278
34	35	36	165218	+55.326	31.17	-0.023	-0.39	-0.025	-0.11	-0.029	-0.03	-0.025048	-0.024359	-0.023648
			165220	+03.162	13.35	+0.024	-0.23	+0.026	-0.41	+0.030	-0.58	+0.017846	+0.018323	+0.018817
			165232	+44.370	07.76	+0.011	+0.96	+0.011	+0.70	+0.012	+0.76	+0.278508	+0.278401	+0.278320
			165246	+17.785	42.42	-0.005	-0.56	-0.005	-0.42	-0.006	-0.46	+0.557152	+0.556237	+0.555302
			165228	+42.174	59.89	-0.006	+0.23	-0.007	+0.25	-0.008	+0.31	+0.171542	+0.171397	+0.171209
37	38	39	165228	+42.174	59.89	-0.037	-0.07	-0.043	-0.16	-0.042	-0.27	+0.204250	+0.203798	+0.203356
			165233	+46.789	30.67	+0.052	+0.22	+0.066	+0.21	+0.062	+0.40	+0.391502	+0.390656	+0.389629
			165235	+06.680	37.39	+0.032	-0.15	-0.042	-0.13	-0.040	-0.26	+0.416560	+0.415839	+0.415136
			165218	+55.326	31.17	-0.009	+0.17	-0.002	-0.06	-0.005	-0.03	-0.031058	-0.029855	-0.028536
			165220	+03.162	13.35	+0.027	-0.17	+0.021	+0.14	+0.024	+0.16	+0.018747	+0.019511	+0.020414
40	41	42	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	+0.000936	+0.000655	+0.000402
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	+0.245975	+0.246068	+0.246185
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	+0.464283	+0.464656	+0.465067
			165235	+06.680	37.39	+0.006	+0.12	+0.028	+0.20	+0.023	+0.17	+0.227767	+0.227766	+0.227771
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	+0.061039	+0.060854	+0.060575
43	44	45	165218	+55.326	31.17	+0.013	+0.06	+0.020	-0.01	+0.019	+0.05	+0.691807	+0.690873	+0.689845
			165208	+31.387	42.28	-0.028	-0.10	-0.037	-0.03	-0.039	-0.13	+0.280457	+0.280374	+0.280305
			165197	+26.030	27.76	+0.014	+0.01	+0.009	+0.09	+0.018	+0.09	-0.031812	-0.031204	-0.030486
			165184	+40.617	15.35	+0.003	+0.06	+0.016	-0.10	+0.006	-0.03	-0.114323	-0.113660	-0.113061
			165192	+11.658	22.30	-0.002	-0.03	-0.009	+0.05	-0.004	+0.01	+0.173871	+0.173637	+0.173397
46	47	48	165335	+45.989	55.88	+0.035	+0.26	+0.032	-0.02	+0.028	-0.18	+0.085672	+0.086341	+0.087078
			165325	+28.910	58.30	-0.051	-0.53	-0.049	-0.29	-0.045	-0.11	+0.613218	+0.613513	+0.613832
			165355	+22.790	49.56	+0.042	+0.62	+0.043	+0.64	+0.043	+0.55	+0.300613	+0.300518	+0.300406
			165382	+49.317	46.96	+0.017	+0.05	+0.014	-0.19	+0.011	-0.29	+0.259680	+0.258907	+0.258099
			165388	+28.359	58.80	-0.043	-0.40	-0.041	-0.14	-0.037	+0.03	-0.259183	-0.259279	-0.259415
49	50	51	165326	+29.502	22.67	-0.024	+0.65	-0.031	+0.94	-0.034	+0.75	+0.840575	+0.841412	+0.842301
			165337	+53.668	29.54	+0.005	-0.73	+0.006	-0.86	+0.002	-0.75	+0.418457	+0.418876	+0.419413
			165357	+36.708	23.20	+0.015	+0.05	+0.020	-0.08	+0.025	-0.01	-0.149933	-0.149777	-0.149467
			165353	+08.998	28.39	+0.041	-0.43	+0.054	-0.86	+0.064	-0.61	+0.206848	+0.206275	+0.205599
			165373	+52.719	57.67	-0.037	+0.46	-0.048	+0.85	-0.057	+0.61	-0.315948	-0.316786	-0.317846
52	53	54	165335	+45.989	55.88	-0.039	+0.07	-0.027	+0.29	-0.021	+0.24	-0.312671	-0.312774	-0.312952
			165322	+07.788	56.18	+0.028	+0.13	+0.008	-0.25	+0.004	-0.09	+0.051306	+0.051411	+0.051554
			165285	+36.164	47.10	-0.001	-0.09	+0.005	+0.03	+0.005	-0.03	+0.663330	+0.664059	+0.664777
			165325	+28.910	58.30	-0.026	+0.16	-0.025	+0.18	-0.021	+0.21	+0.551826	+0.551491	+0.551195
			165337	+53.668	29.54	+0.038	-0.27	+0.040	-0.25	+0.033	-0.33	+0.046209	+0.045812	+0.045426
55	56	57	165260	+43.997	27.61	-0.007	+0.34	-0.010	+0.37	-0.009	+0.28	+0.498866	+0.498977	+0.499039
			165285	+36.164	47.10	+0.002	-0.47	+0.004	-0.45	-0.002	-0.31	+0.212520	+0.212694	+0.212867
			165322	+07.788	56.18	+0.005	-0.07	+0.006	-0.09	+0.007	-0.08	+0.357106	+0.355904	+0.354795
			165304	+22.857	14.56	-0.016	+0.47	-0.020	+0.55	-0.022	+0.44	-0.086390	-0.086092	-0.085818
			165282	+29.006	07.60	+0.017	-0.28	+0.021	-0.37	+0.025	-0.32	+0.017899	+0.018516	+0.019117
58	59	60	165282	+29.006	07.60	+0.029	-0.13	+0.024	-0.33	+0.023	-0.33	+0.157544	+0.157946	+0.158396
			165322	+07.788	56.18	-0.053	+0.19	-0.042	+0.16	-0.045	+0.19	+0.009727	+0.009550	+0.009396
			165285	+36.164	47.10	-0.004	+0.06	-0.006	+0.40	-0.002	+0.38	+0.262467	+0.262775	+0.262978
			165337	+53.668	29.54	+0.035	-0.12	+0.028	-0.13	+0.029	-0.15	+0.012760	+0.012221	+0.011639
			165268	+26.837	14.94	-0.006	+0.01	-0.004	-0.09	-0.005	-0.08	+0.557502	+0.557547	+0.557590

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
61	62	63	165322	+07.788	56.18	-0.010	+0.38	-0.004	+0.27	-0.007	+0.13	+0.018772	+0.018338	+0.017843
			165316	+48.494	49.68	+0.014	-0.47	+0.011	-0.22	+0.015	-0.13	-0.029551	-0.029650	-0.029821
			165285	+36.164	47.10	-0.011	+0.24	-0.019	-0.14	-0.022	-0.00	+0.229802	+0.229914	+0.230073
			165255	+12.374	44.64	+0.001	+0.02	+0.006	+0.13	+0.006	+0.04	+0.310558	+0.311292	+0.312101
			165268	+26.837	14.94	+0.006	-0.18	+0.006	-0.04	+0.008	-0.04	+0.470420	+0.470106	+0.469804
64	65	66	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	-0.460018	-0.459957	-0.459878
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.109959	+0.110559	+0.111201
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	+0.780208	+0.780237	+0.780287
			165282	+29.006	07.60	+0.017	+0.33	+0.029	+0.32	+0.023	+0.24	+0.529730	+0.529463	+0.529186
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	+0.040121	+0.039698	+0.039203
67	68	69	165228	+42.174	59.89	+0.008	+0.25	+0.006	+0.32	+0.006	+0.31	+0.716519	+0.717110	+0.717788
			165255	+12.374	44.64	-0.023	-0.68	-0.017	-0.80	-0.017	-0.75	+0.245050	+0.245127	+0.245253
			165282	+29.006	07.60	+0.017	+0.42	+0.012	+0.27	+0.018	+0.18	-0.074954	-0.075154	-0.075373
			165285	+36.164	47.10	-0.006	-0.07	-0.004	+0.23	-0.012	+0.31	-0.055276	-0.055545	-0.055832
			165268	+26.837	14.95	+0.004	+0.08	+0.003	-0.02	+0.006	-0.05	+0.168661	+0.168462	+0.168164
70	71	72	165232	+44.370	07.76	+0.020	-0.65	+0.021	-0.69	+0.018	-0.58	+0.276405	+0.277341	+0.278231
			165233	+46.789	30.67	-0.027	+0.67	-0.024	+0.67	-0.012	+0.55	+0.741990	+0.742811	+0.743504
			165246	+17.785	42.42	+0.014	+0.03	+0.006	+0.11	-0.016	+0.11	+0.030231	+0.030164	+0.030170
			165257	+24.270	54.59	-0.013	+0.18	-0.009	+0.16	+0.002	+0.12	-0.791903	-0.792647	-0.793737
			165255	+12.374	44.64	+0.005	-0.23	+0.006	-0.25	+0.008	-0.21	+0.743286	+0.742531	+0.741632
73	74	75	165228	+42.174	59.89	-0.037	-0.07	-0.043	-0.16	-0.042	-0.27	+0.740171	+0.739726	+0.739173
			165233	+46.789	30.67	+0.052	+0.22	+0.066	+0.21	+0.062	+0.40	+0.163599	+0.162699	+0.161869
			165235	+06.680	37.39	-0.032	-0.15	-0.042	-0.13	-0.040	-0.26	-0.342289	-0.342691	-0.343242
			165218	+55.326	31.17	-0.009	+0.17	-0.002	-0.06	-0.005	-0.02	+0.111958	+0.113076	+0.114029
			165220	+03.162	13.35	+0.027	-0.17	+0.021	+0.14	+0.024	+0.16	+0.326401	+0.327231	+0.327970
76	77	78	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	+0.166592	+0.166256	+0.165982
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	+0.688669	+0.688795	+0.688862
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	+0.560415	+0.560871	+0.561315
			165235	+06.680	37.39	+0.006	+0.12	+0.028	+0.20	+0.023	+0.17	-0.061417	-0.061441	-0.061426
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	-0.354259	-0.354474	-0.354753
79	80	81	165184	+40.617	15.35	+0.014	+0.61	+0.031	+0.58	+0.025	+0.52	+0.303081	+0.303525	+0.303924
			165192	+11.658	22.30	-0.008	-0.55	-0.022	-0.56	-0.016	-0.45	+0.567101	+0.567526	+0.567803
			165218	+55.326	31.17	+0.011	-0.02	+0.012	-0.10	+0.013	+0.03	-0.226344	-0.226733	-0.226947
			165208	+31.387	42.28	-0.018	-0.23	-0.026	-0.13	-0.024	-0.25	-0.136625	-0.136585	-0.136574
			165228	+42.174	59.89	+0.000	+0.19	+0.005	+0.21	+0.003	+0.15	+0.492788	+0.492267	+0.491794
82	83	84	165335	+45.989	55.88	+0.035	+0.26	+0.032	-0.02	+0.028	-0.18	+0.455060	+0.455914	+0.456768
			165325	+28.910	58.30	-0.051	-0.53	-0.049	-0.29	-0.045	-0.11	+0.206709	+0.207041	+0.207410
			165355	+22.790	49.56	+0.042	+0.62	+0.043	+0.64	+0.043	+0.55	+0.148551	+0.148444	+0.148353
			165382	+49.317	46.96	+0.017	+0.05	+0.014	-0.19	+0.011	-0.29	-0.057445	-0.058298	-0.059179
			165388	+28.359	58.80	-0.043	-0.40	-0.041	-0.14	-0.037	+0.03	+0.247126	+0.246899	+0.246648
85	86	87	165310	+08.313	33.25	-0.028	-0.33	-0.023	-0.21	-0.021	-0.34	+0.299640	+0.300387	+0.301281
			165322	+07.788	56.18	+0.067	+0.75	+0.056	+0.48	+0.050	+0.77	+0.211668	+0.212049	+0.212416
			165326	+29.502	22.67	-0.040	-0.30	-0.038	-0.20	-0.032	-0.31	+0.136999	+0.137239	+0.137369
			165337	+53.668	29.54	+0.010	-0.12	+0.016	-0.06	+0.011	-0.12	+0.153404	+0.153071	+0.152677
			165357	+36.708	23.20	-0.009	-0.00	-0.011	-0.01	-0.008	-0.00	+0.198290	+0.197255	+0.196256
88	89	90	165335	+45.989	55.88	-0.024	+0.21	-0.015	+0.48	-0.009	+0.33	-0.034396	-0.035306	-0.036191
			165322	+07.788	56.18	+0.037	-0.07	+0.017	-0.47	+0.013	-0.27	+0.117506	+0.117081	+0.116605
			165285	+36.164	47.10	-0.019	-0.27	-0.003	-0.08	-0.006	-0.13	+0.484646	+0.485278	+0.485955
			165310	+08.313	33.25	+0.014	+0.55	-0.005	+0.41	+0.003	+0.40	+0.339677	+0.340362	+0.340993
			165338	+58.121	56.80	-0.007	-0.42	+0.006	-0.35	-0.001	-0.33	+0.092567	+0.092585	+0.092638

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
91	92	93	165260	+43.997	27.61	-0.007	+0.34	-0.010	+0.37	-0.009	+0.28	+0.011258	+0.011346	+0.011404
			165285	+36.164	47.10	+0.002	-0.47	+0.004	-0.45	-0.002	-0.31	+0.206001	+0.206185	+0.206346
			165322	+07.788	56.18	+0.005	-0.07	+0.006	-0.09	+0.007	-0.08	-0.004330	-0.005672	-0.006940
			165304	+22.857	14.56	-0.016	+0.47	-0.020	+0.55	-0.022	+0.44	+0.413851	+0.414195	+0.414569
			165232	+29.006	07.60	+0.017	-0.28	+0.021	-0.37	+0.025	-0.32	+0.373221	+0.373944	+0.374621
94	95	96	165322	+07.788	56.18	-0.010	+0.31	-0.018	+0.20	-0.015	+0.18	-0.074974	-0.075918	-0.076813
			165285	+36.164	47.10	+0.001	+0.18	+0.007	+0.37	+0.003	+0.38	+0.327698	+0.327953	+0.328331
			165283	+30.279	21.48	-0.013	+0.55	-0.020	+0.51	-0.020	+0.49	+0.352246	+0.352890	+0.353406
			165310	+08.313	33.25	+0.013	-0.44	+0.024	-0.29	+0.021	-0.27	+0.048764	+0.048373	+0.047926
			165262	+29.006	07.60	+0.009	-0.59	+0.007	-0.79	+0.011	-0.78	+0.346266	+0.346701	+0.347149
97	98	99	165316	+48.494	49.68	+0.004	-0.32	-0.000	-0.27	+0.004	-0.19	-0.108166	-0.108989	-0.109907
			165265	+36.164	47.10	-0.020	+0.45	-0.021	+0.30	-0.020	+0.21	+0.119696	+0.119550	+0.119246
			165255	+12.374	44.64	+0.017	-0.34	+0.019	-0.21	+0.017	-0.15	+0.419893	+0.420511	+0.421097
			165283	+30.279	21.48	-0.017	+0.07	-0.023	-0.01	-0.016	-0.01	+0.411791	+0.412317	+0.413005
			165304	+22.857	14.56	+0.016	+0.14	+0.025	+0.19	+0.015	+0.14	+0.156706	+0.156611	+0.156558
100	101	102	165276	+48.171	11.84	+0.010	-0.39	+0.018	-0.09	+0.020	-0.09	-0.203677	-0.203544	-0.203461
			165235	+06.680	37.39	-0.007	+0.87	-0.019	+0.38	-0.023	+0.22	-0.105927	-0.105654	-0.105254
			165218	+55.326	31.17	-0.011	-0.69	-0.009	-0.50	-0.005	-0.16	+0.140463	+0.140971	+0.141526
			165283	+30.279	21.48	-0.013	-0.00	-0.017	-0.15	-0.017	-0.01	+0.635845	+0.635015	+0.634210
			165233	+46.789	30.67	+0.021	+0.21	+0.026	+0.35	+0.025	+0.06	+0.533296	+0.533213	+0.532979
103	104	105	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	+0.080412	+0.080479	+0.080505
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.578541	+0.579323	+0.579983
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	+0.004	+0.30	+0.360629	+0.360660	+0.360759
			165282	+29.006	07.60	+0.017	+0.33	+0.029	+0.32	+0.023	+0.24	+0.115879	+0.115543	+0.115306
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	-0.135462	-0.135996	-0.136552
106	107	108	165243	+53.351	19.06	-0.026	+0.29	-0.022	+0.24	-0.026	+0.47	+0.429030	+0.429112	+0.429202
			165220	+03.162	13.35	+0.034	-0.47	+0.032	-0.41	+0.029	-0.72	+0.436871	+0.437322	+0.437790
			165228	+42.174	59.89	-0.015	+0.53	-0.016	+0.50	-0.019	+0.67	+0.178831	+0.176100	+0.176327
			165255	+12.374	44.64	-0.020	-0.47	-0.012	-0.50	-0.016	-0.41	+0.009617	+0.009366	+0.009115
			165282	+29.006	07.60	+0.025	+0.13	+0.019	+0.17	+0.024	-0.01	-0.051349	-0.051909	-0.052445
109	110	111	165232	+44.370	07.76	+0.020	-0.65	+0.021	-0.69	+0.018	-0.56	+0.579327	+0.580216	+0.581354
			165233	+46.789	30.67	-0.027	+0.67	-0.024	+0.67	-0.012	+0.55	+0.652402	+0.653350	+0.654255
			165246	+17.785	42.42	+0.014	+0.03	+0.006	+0.11	-0.016	+0.11	+0.112225	+0.112179	+0.112144
			165257	+24.270	54.59	-0.013	+0.18	-0.009	+0.16	+0.002	+0.12	-0.335561	-0.336550	-0.337601
			165255	+12.374	44.64	+0.005	-0.23	+0.006	-0.25	+0.008	-0.21	-0.008453	-0.009295	-0.010182
112	113	114	165218	+55.326	31.17	-0.023	-0.39	-0.025	-0.11	-0.029	-0.03	+0.440687	+0.441557	+0.442284
			165220	+03.162	13.35	+0.024	-0.23	+0.026	-0.41	+0.030	-0.58	+0.346764	+0.347355	+0.347803
			165232	+44.370	07.76	+0.011	+0.96	+0.011	+0.73	+0.012	+0.76	+0.196362	+0.196291	+0.196264
			165246	+17.785	42.42	-0.005	-0.56	-0.005	-0.42	-0.006	-0.46	-0.079694	-0.080827	-0.081675
			165228	+42.174	59.89	-0.006	+0.23	-0.007	+0.25	-0.008	+0.31	+0.095881	+0.095624	+0.095325
115	116	117	165235	+06.680	37.39	-0.024	-0.17	-0.034	+0.15	-0.036	-0.01	+0.204986	+0.204614	+0.204079
			165232	+44.370	07.76	+0.033	+0.12	+0.042	+0.01	+0.043	-0.01	+0.582154	+0.581800	+0.581545
			165212	+54.891	52.39	+0.030	-0.06	+0.030	+0.32	+0.030	-0.04	-0.059488	-0.058977	-0.058714
			165205	+13.797	52.63	-0.025	+0.02	-0.026	-0.21	-0.026	+0.03	+0.835903	+0.836726	+0.837720
			165231	+16.959	03.65	-0.014	+0.10	-0.011	-0.28	-0.010	+0.03	-0.563555	-0.564164	-0.564629
118	119	120	165228	+42.174	59.89	-0.037	-0.07	-0.043	-0.16	-0.042	-0.27	-0.030805	-0.031303	-0.031813
			165233	+46.789	30.67	+0.052	+0.22	+0.066	+0.21	+0.062	+0.40	-0.246345	-0.247567	-0.248636
			165235	+06.680	37.39	-0.032	-0.15	-0.042	-0.13	-0.040	-0.26	-0.100190	-0.100879	-0.101643
			165218	+55.326	31.17	-0.009	+0.17	-0.002	-0.06	-0.005	-0.03	+0.792470	+0.793872	+0.795310
			165220	+03.162	13.35	+0.027	-0.17	+0.021	+0.14	+0.024	+0.16	+0.584909	+0.585877	+0.586721

TABLE 2. STAR RESIDUALS. DEPENDENCES.

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
121	122	123	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	-0.253498	-0.253912	-0.254225
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	+0.369405	+0.369504	+0.369578
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	+0.844574	+0.845082	+0.845588
			165235	+06.680	37.39	+0.006	+0.12	+0.028	+0.20	+0.023	+0.17	+0.227481	+0.227476	+0.227525
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	-0.187962	-0.188150	-0.188465
124	125	126	165218	+55.326	31.17	+0.013	+0.06	+0.020	-0.01	+0.019	+0.05	-0.227134	-0.228334	-0.229571
			165208	+31.387	42.28	-0.028	-0.10	-0.037	-0.03	-0.039	-0.13	+0.216866	+0.216864	+0.216882
			165197	+26.030	27.76	+0.014	+0.01	+0.009	+0.09	+0.018	+0.09	+0.545234	+0.546091	+0.546946
			165184	+40.617	15.35	+0.003	+0.06	+0.016	-0.10	+0.006	-0.03	+0.468707	+0.469453	+0.470244
			165192	+11.658	22.30	-0.002	-0.03	-0.009	+0.05	-0.004	+0.01	-0.003674	-0.004074	-0.004501
127	128	129	165335	+45.989	55.88	+0.035	+0.26	+0.032	-0.02	+0.028	-0.18	+0.254015	+0.254661	+0.255270
			165325	+28.910	58.30	-0.051	-0.53	-0.049	-0.29	-0.045	-0.11	+0.093520	+0.093848	+0.094182
			165355	+22.790	49.56	+0.042	+0.62	+0.043	+0.64	+0.043	+0.55	+0.169000	+0.168932	+0.168875
			165382	+49.317	46.96	+0.017	+0.05	+0.014	-0.19	+0.011	-0.29	+0.159924	+0.159250	+0.158602
			165388	+28.359	58.80	-0.043	-0.40	-0.041	-0.14	-0.037	+0.03	+0.323541	+0.323308	+0.323071
130	131	132	165310	+08.313	33.25	-0.028	-0.33	-0.023	-0.21	-0.021	-0.34	+0.031023	+0.031683	+0.032307
			165322	+07.788	56.18	+0.067	+0.75	+0.056	+0.48	+0.050	+0.77	+0.077026	+0.077356	+0.077669
			165326	+29.502	22.67	-0.040	-0.30	-0.038	-0.20	-0.032	-0.31	+0.045309	+0.045579	+0.045882
			165337	+53.668	29.54	+0.010	-0.12	+0.016	-0.06	+0.011	-0.12	+0.271327	+0.271055	+0.270777
			165357	+36.708	23.20	-0.009	-0.00	-0.011	-0.01	-0.008	-0.00	+0.575314	+0.574326	+0.573365
133	134	135	165335	+45.989	55.88	-0.024	+0.21	-0.015	+0.48	-0.009	+0.33	+0.432868	+0.432149	+0.431467
			165322	+07.788	56.18	+0.037	-0.07	+0.017	-0.47	+0.013	-0.27	+0.375427	+0.374927	+0.374611
			165285	+36.164	47.10	-0.019	-0.27	-0.003	-0.08	-0.006	-0.13	+0.146087	+0.146709	+0.147239
			165310	+08.313	33.25	+0.014	+0.55	-0.005	+0.41	+0.003	+0.40	-0.006794	-0.006275	-0.005790
			165338	+58.121	56.80	-0.007	-0.42	+0.006	-0.35	-0.001	-0.33	+0.052432	+0.052480	+0.052473
136	137	138	165285	+36.164	47.10	-0.039	+0.02	-0.035	+0.08	-0.032	+0.03	+0.122662	+0.123001	+0.123348
			165322	+07.788	56.18	+0.015	+0.02	+0.012	+0.01	+0.010	+0.01	+0.695170	+0.694013	+0.693027
			165304	+22.857	14.56	-0.021	+0.21	-0.033	+0.39	-0.033	+0.23	+0.067751	+0.067965	+0.068088
			165282	+29.006	07.60	+0.049	-0.07	+0.048	-0.19	+0.044	-0.09	-0.071482	-0.070807	-0.070177
			165310	+08.313	33.25	-0.004	-0.17	+0.009	-0.29	+0.011	-0.18	+0.185898	+0.185828	+0.185713
139	140	141	165322	+07.788	56.18	-0.010	+0.31	-0.018	+0.20	-0.015	+0.18	+0.477514	+0.476693	+0.475921
			165285	+36.164	47.10	+0.001	+0.18	+0.007	+0.37	+0.003	+0.38	+0.174981	+0.175274	+0.175619
			165283	+30.279	21.48	-0.013	+0.55	-0.020	+0.51	-0.020	+0.49	-0.011303	-0.010814	-0.010381
			165310	+08.313	33.25	+0.013	-0.44	+0.024	-0.29	+0.021	-0.27	+0.260371	+0.260037	+0.259618
			165282	+29.006	07.60	+0.009	-0.59	+0.007	-0.79	+0.011	-0.78	+0.098438	+0.098811	+0.099223
142	143	144	165316	+48.494	49.68	+0.004	-0.32	-0.000	-0.27	+0.004	-0.19	+0.435039	+0.434447	+0.433794
			165285	+36.164	47.10	-0.020	+0.45	-0.021	+0.30	-0.020	+0.21	+0.304092	+0.303907	+0.303759
			165255	+12.374	44.64	+0.017	-0.34	+0.019	-0.21	+0.017	-0.15	+0.066478	+0.066902	+0.067403
			165283	+30.279	21.48	-0.017	+0.07	-0.023	-0.01	-0.016	-0.01	-0.006587	-0.006176	-0.005747
			165304	+22.857	14.56	+0.016	+0.14	+0.025	+0.19	+0.015	+0.14	+0.200978	+0.200921	+0.200790
145	146	147	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	-0.013980	-0.013945	-0.013940
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	-0.052325	-0.051790	-0.051230
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	+0.356740	+0.356800	+0.356866
			165282	+29.006	07.60	+0.017	+0.33	+0.029	+0.32	+0.023	+0.24	+0.388197	+0.387992	+0.387772
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	+0.321367	+0.320943	+0.320531
148	149	150	165247	+22.373	44.17	-0.046	+0.92	-0.043	+0.78	-0.026	+0.78	+0.284832	+0.285295	+0.285760
			165257	+24.270	54.59	+0.034	-0.89	+0.036	-0.75	+0.011	-0.68	-0.045664	-0.045294	-0.044929
			165299	+06.147	14.57	+0.014	+0.18	+0.003	+0.14	+0.025	+0.00	-0.175624	-0.175919	-0.176304
			165304	+22.857	14.56	-0.050	+0.39	-0.034	+0.33	-0.052	+0.53	+0.291113	+0.290672	+0.290328
			165282	+29.006	07.60	+0.049	-0.60	+0.038	-0.51	+0.043	-0.63	+0.645344	+0.645257	+0.645145

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	"	S	"	S	"	S	"			
151	152	153	165243	+53.351	19.06	-0.026	+0.29	-0.023	+0.24	-0.028	+0.47	+0.219294	+0.219398	+0.219427
			165220	+03.162	13.35	+0.034	-0.47	+0.032	-0.41	+0.039	-0.72	+0.032141	+0.032563	+0.032945
			165228	+42.174	59.89	-0.015	+0.53	-0.016	+0.50	-0.019	+0.67	+0.054386	+0.054619	+0.054866
			165255	+12.374	44.64	-0.020	-0.47	-0.012	-0.50	-0.016	-0.41	+0.273882	+0.273653	+0.273458
			165282	+29.006	07.60	+0.025	+0.13	+0.019	+0.17	+0.024	-0.01	+0.420297	+0.419767	+0.419304
154	155	156	165232	+44.370	07.76	+0.020	-0.65	+0.021	-0.69	+0.018	-0.58	-0.168229	-0.167413	-0.166545
			165233	+46.789	30.67	-0.027	+0.67	-0.024	+0.67	-0.012	+0.55	-0.005893	-0.005054	-0.004160
			165246	+17.785	42.42	+0.014	+0.03	+0.006	+0.11	-0.016	+0.11	+0.206441	+0.206287	+0.206081
			165257	+24.270	54.59	-0.013	+0.18	-0.009	+0.16	+0.002	+0.12	+0.262427	+0.261562	+0.260682
			165255	+12.374	44.64	+0.005	-0.23	+0.006	-0.25	+0.008	-0.21	+0.705254	+0.704617	+0.703943
157	158	159	165228	+42.174	59.89	-0.032	+0.25	-0.029	+0.22	-0.021	+0.26	+0.254265	+0.254655	+0.255022
			165246	+17.785	42.42	+0.041	-0.48	+0.050	-0.42	+0.031	-0.50	+0.277320	+0.277675	+0.277900
			165255	+12.374	44.63	+0.026	+0.04	+0.004	+0.02	+0.010	+0.02	+0.174496	+0.174402	+0.174357
			165285	+36.164	47.10	+0.008	-0.26	+0.023	-0.22	+0.011	-0.26	+0.097080	+0.096545	+0.096181
			165283	+30.279	21.48	-0.042	+0.45	-0.048	+0.39	-0.031	+0.47	+0.196839	+0.196723	+0.196540
160	161	162	165283	+30.279	21.48	-0.003	+0.15	-0.007	+0.11	-0.002	+0.01	+0.135607	+0.135437	+0.135283
			165220	+03.162	13.35	+0.011	+0.01	+0.013	+0.04	+0.008	+0.10	+0.459691	+0.460196	+0.460742
			165285	+36.164	47.10	+0.021	+0.27	+0.019	+0.27	+0.015	+0.25	+0.082279	+0.082076	+0.081843
			165282	+29.006	07.60	+0.001	-0.42	+0.010	-0.33	+0.000	-0.10	+0.106372	+0.106179	+0.105988
			165255	+12.374	44.63	-0.029	-0.00	-0.035	-0.09	-0.021	-0.26	+0.216051	+0.216112	+0.216144
163	164	165	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	+0.256684	+0.256370	+0.256062
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	+0.325414	+0.325519	+0.325612
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	+0.215765	+0.216204	+0.216636
			165235	+06.680	37.39	+0.006	+0.12	+0.028	+0.20	+0.023	+0.17	+0.115469	+0.115488	+0.115519
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	+0.086669	+0.086419	+0.086171
166	167	168	165228	+42.174	59.89	-0.021	+0.44	-0.008	+0.46	-0.018	+0.42	+0.395453	+0.395652	+0.395856
			165218	+55.326	31.17	+0.000	-0.63	-0.011	-0.67	+0.007	-0.57	+0.370483	+0.370953	+0.371375
			165235	+06.680	37.39	+0.032	+0.55	+0.033	+0.59	+0.014	+0.46	+0.156454	+0.156543	+0.156669
			165257	+24.270	54.59	-0.035	-0.09	-0.028	-0.10	-0.021	-0.04	-0.024224	-0.024575	-0.024896
			165255	+12.374	44.63	+0.024	-0.27	+0.014	-0.28	+0.018	-0.27	+0.101835	+0.101427	+0.100996
169	170	171	165385	+22.010	51.06	-0.000	+0.30	-0.002	+0.39	-0.003	+0.31	+0.065274	+0.065122	+0.064994
			165384	+16.909	08.06	+0.015	-0.14	+0.019	-0.24	+0.014	-0.16	+0.193539	+0.192499	+0.191489
			165339	+02.030	37.02	-0.037	+0.14	-0.046	+0.32	-0.033	+0.17	+0.363812	+0.364002	+0.364128
			165343	+26.639	51.64	+0.052	-0.06	+0.064	-0.27	+0.045	-0.10	+0.267562	+0.268175	+0.268801
			165372	+51.654	01.14	-0.029	-0.23	-0.034	-0.20	-0.023	-0.22	+0.109813	+0.110202	+0.110589
172	173	174	165310	+08.313	33.25	-0.007	-0.18	-0.008	-0.19	-0.017	-0.15	-0.555011	-0.554551	-0.554062
			165282	+29.006	07.60	+0.016	+0.31	+0.015	+0.33	+0.035	+0.22	-0.084938	-0.084423	-0.083959
			165335	+45.989	55.88	-0.006	+0.18	+0.000	+0.14	-0.003	+0.24	+0.513814	+0.513192	+0.512619
			165322	+07.788	56.18	+0.017	-0.12	+0.006	-0.07	+0.017	-0.23	+0.628984	+0.628545	+0.628002
			165285	+36.164	47.10	-0.018	-0.18	-0.013	-0.22	-0.032	-0.08	+0.497150	+0.497237	+0.497400
175	176	177	165257	+24.270	54.59	+0.008	-0.02	+0.009	+0.04	+0.003	-0.03	-0.466820	-0.466040	-0.465311
			165255	+12.374	44.64	+0.015	-0.16	+0.019	-0.19	+0.026	-0.20	+0.214419	+0.214733	+0.215047
			165285	+36.164	47.10	-0.033	+0.29	-0.041	+0.26	-0.045	+0.35	+0.665416	+0.665055	+0.664728
			165310	+08.313	33.25	+0.042	-0.30	+0.051	-0.21	+0.048	-0.38	+0.557594	+0.557011	+0.556379
			165302	+19.080	19.46	-0.031	+0.20	-0.038	+0.10	-0.032	+0.26	+0.029391	+0.029240	+0.029157
178	179	180	165283	+30.279	21.48	-0.003	+0.15	-0.007	+0.11	-0.002	+0.01	+0.007139	+0.007002	+0.007325
			165220	+03.162	13.35	+0.011	+0.01	+0.013	+0.04	+0.008	+0.10	-0.197507	-0.196799	-0.196467
			165285	+36.164	47.10	+0.021	+0.27	+0.019	+0.27	+0.015	+0.25	+0.535979	+0.535636	+0.535262
			165282	+29.006	07.60	+0.001	-0.42	+0.010	-0.33	+0.000	-0.10	+0.335846	+0.335611	+0.335535
			165255	+12.374	44.63	-0.029	-0.00	-0.035	-0.09	-0.021	-0.26	+0.318543	+0.318550	+0.318345

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
181	182	183	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	+0.769007	+0.768663	+0.768276
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	+0.283480	+0.283488	+0.283564
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	-0.414211	-0.413753	-0.413320
			165235	+06.680	37.39	+0.006	+0.12	+0.023	+0.20	+0.023	+0.17	+0.001746	+0.001881	+0.001937
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	+0.359978	+0.359721	+0.359543
184	185	186	165228	+42.174	59.89	-0.021	+0.44	-0.008	+0.46	-0.018	+0.42	+0.208421	+0.208587	+0.208693
			165218	+55.326	31.17	+0.000	-0.63	-0.011	-0.67	+0.007	-0.57	-0.287243	-0.286779	-0.286228
			165235	+06.680	37.39	+0.032	+0.55	+0.033	+0.59	+0.014	+0.46	-0.059519	-0.059344	-0.059235
			165257	+24.270	54.59	-0.035	-0.09	-0.028	-0.10	-0.021	-0.04	+0.357181	+0.356919	+0.356660
			165255	+12.374	44.63	+0.024	-0.27	+0.014	-0.28	+0.018	-0.27	+0.781160	+0.780618	+0.780111
187	188	189	165319	+49.399	39.88	+0.001	-0.22	-0.001	-0.18	-0.004	-0.10	+0.169368	+0.168939	+0.168511
			165317	+48.650	27.55	-0.014	+0.12	-0.016	+0.12	-0.014	+0.08	-0.288928	-0.289864	-0.290799
			165284	+34.954	34.45	+0.054	+0.19	+0.067	+0.08	+0.068	+0.01	+0.134347	+0.134484	+0.134621
			165273	+41.643	02.78	-0.049	-0.37	-0.062	-0.23	-0.065	-0.10	+0.339425	+0.339909	+0.340361
			165281	+27.431	59.28	+0.008	+0.27	+0.012	+0.21	+0.015	+0.11	+0.645788	+0.646533	+0.647306
190	191	192	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	+0.833078	+0.833514	+0.833976
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.233279	+0.233002	+0.232635
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	-0.239337	-0.240014	-0.240594
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.063466	+0.063617	+0.063741
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.109515	+0.109880	+0.110243
193	194	195	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	+0.894182	+0.894689	+0.895655
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.121605	+0.121510	+0.121326
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	-0.769809	-0.769677	-0.770304
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.102110	+0.102136	+0.102122
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.251001	+0.251102	+0.251201
196	197	198	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	+1.081535	+1.082145	+1.082823
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.137360	+0.137278	+0.136967
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	-0.494437	-0.495167	-0.495824
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.059040	+0.059129	+0.059185
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.216498	+0.216655	+0.216649
199	200	201	165339	+02.030	37.02	+0.024	-0.15	+0.024	-0.27	+0.021	+0.05	+0.264923	+0.264748	+0.264538
			165328	+51.216	23.99	+0.025	+0.67	+0.036	+0.69	+0.022	+0.47	-0.105235	-0.105593	-0.105838
			165302	+19.080	19.46	-0.011	-0.53	-0.019	-0.59	-0.010	-0.33	+0.428427	+0.429228	+0.429945
			165354	+10.844	57.00	-0.028	-0.35	-0.035	-0.30	-0.025	-0.33	-0.268083	-0.269054	-0.270055
			165319	+49.399	39.88	-0.010	+0.36	-0.006	+0.46	-0.008	+0.13	+0.679969	+0.680660	+0.681410
202	203	204	165319	+49.399	39.88	+0.001	-0.22	-0.001	-0.18	-0.004	-0.10	+0.254521	+0.254199	+0.253876
			165317	+48.650	27.55	-0.014	+0.12	-0.016	+0.12	-0.014	+0.08	+0.178284	+0.177152	+0.176005
			165284	+34.954	34.45	+0.054	+0.19	+0.067	+0.08	+0.068	+0.01	+0.158871	+0.158898	+0.158917
			165273	+41.643	02.78	-0.049	-0.37	-0.062	-0.23	-0.065	-0.10	+0.168154	+0.168634	+0.169119
			165281	+27.431	59.28	+0.008	+0.27	+0.012	+0.21	+0.015	+0.11	+0.240171	+0.241116	+0.242084
205	206	207	165354	+10.844	57.00	-0.020	-0.10	-0.019	-0.11	-0.019	-0.18	-0.548259	-0.549255	-0.550238
			165332	+14.191	59.49	+0.012	+0.58	+0.015	+0.48	+0.014	+0.48	-0.025132	-0.025386	-0.025637
			165339	+02.030	37.02	+0.026	-0.43	+0.021	-0.32	+0.022	-0.17	+0.258889	+0.258812	+0.258699
			165319	+49.399	39.88	-0.023	+0.24	-0.019	+0.16	-0.020	+0.05	+0.852768	+0.853519	+0.854296
			165300	+09.759	32.13	+0.005	-0.28	+0.002	-0.22	+0.003	-0.18	+0.461734	+0.462310	+0.462881
208	209	210	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	+0.763666	+0.764260	+0.764845
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.369913	+0.369598	+0.369226
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	-0.084742	-0.085567	-0.086235
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.015154	+0.015287	+0.015384
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	-0.063991	-0.063578	-0.063220

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
211	212	213	165319	+49.399	39.88	+0.001	-0.22	-0.001	-0.18	-0.004	-0.10	+0.629141	+0.629521	+0.629895
			165317	+48.650	27.55	-0.014	+0.12	-0.016	+0.12	-0.014	+0.08	+0.007329	+0.005627	+0.003954
			165284	+34.954	34.45	+0.054	+0.19	+0.067	+0.08	+0.068	+0.01	-0.127580	-0.128086	-0.128630
			165273	+41.643	02.78	-0.049	-0.37	-0.062	-0.23	-0.065	-0.10	-0.045397	-0.045341	-0.045298
			165281	+27.431	59.28	+0.008	+0.27	+0.012	+0.21	+0.015	+0.11	+0.536507	+0.538279	+0.540079
214	215	216	165354	+10.844	57.00	-0.020	-0.10	-0.019	-0.11	-0.019	-0.18	-0.472255	-0.473345	-0.474402
			165332	+14.191	59.49	+0.012	+0.58	+0.015	+0.48	+0.014	+0.48	-0.032544	-0.032865	-0.033182
			165339	+02.030	37.02	+0.026	-0.43	+0.021	-0.32	+0.022	-0.17	+0.371021	+0.371117	+0.371169
			165319	+49.399	39.88	-0.023	+0.24	-0.019	+0.16	-0.020	+0.05	+0.870367	+0.871328	+0.872290
			165300	+09.759	32.13	+0.005	-0.28	+0.002	-0.22	+0.003	-0.18	+0.263412	+0.263765	+0.264125
217	218	219	165335	+45.989	55.88	+0.035	+0.26	+0.032	-0.02	+0.028	-0.18	+0.611375	+0.612164	+0.612927
			165325	+28.910	58.30	-0.051	-0.53	-0.049	-0.29	-0.045	-0.11	-0.265766	-0.265209	-0.264809
			165355	+22.790	49.56	+0.042	+0.62	+0.043	+0.64	+0.043	+0.55	+0.028222	+0.028169	+0.028142
			165382	+49.317	46.96	+0.017	+0.05	+0.014	-0.19	+0.011	-0.29	-0.151425	-0.152156	-0.152931
			165388	+28.359	58.80	-0.043	-0.40	-0.041	-0.14	-0.037	+0.03	+0.777594	+0.777122	+0.776671
220	221	222	165310	+08.313	33.25	-0.028	-0.33	-0.023	-0.21	-0.021	-0.34	+0.394086	+0.394829	+0.395616
			165322	+07.788	56.18	+0.067	+0.75	+0.056	+0.48	+0.050	+0.77	+0.012203	+0.012697	+0.013075
			165326	+29.502	22.67	-0.040	-0.30	-0.038	-0.20	-0.032	-0.31	-0.456312	-0.455816	-0.455250
			165337	+53.668	29.54	+0.010	-0.12	+0.016	-0.06	+0.011	-0.12	+0.093537	+0.093229	+0.092900
			165357	+36.708	23.20	-0.009	-0.00	-0.011	-0.01	-0.008	-0.00	+0.956487	+0.955062	+0.953658
223	224	225	165335	+45.989	55.88	-0.024	+0.21	-0.015	+0.48	-0.009	+0.33	+0.000177	-0.000727	-0.001646
			165322	+07.788	56.18	+0.037	-0.07	+0.017	-0.47	+0.013	-0.27	+0.010138	+0.009811	+0.009332
			165285	+36.164	47.10	-0.019	-0.27	-0.003	-0.08	-0.006	-0.13	+0.149897	+0.150704	+0.151544
			165310	+08.313	33.25	+0.014	+0.55	-0.005	+0.41	+0.003	+0.40	+0.406091	+0.406695	+0.407343
			165338	+58.121	56.80	-0.007	-0.42	+0.006	-0.35	-0.001	-0.33	+0.433696	+0.433517	+0.433428
226	227	228	165285	+36.164	47.10	-0.039	+0.02	-0.035	+0.08	-0.032	+0.03	-0.159269	-0.158654	-0.158085
			165322	+07.788	56.18	+0.015	+0.02	+0.012	+0.01	+0.010	+0.01	+0.030207	+0.029034	+0.027791
			165304	+22.857	14.56	-0.021	+0.21	-0.033	+0.39	-0.033	+0.23	+0.483585	+0.483574	+0.483715
			165282	+29.006	07.60	+0.049	-0.07	+0.048	-0.19	+0.044	-0.09	+0.114036	+0.114906	+0.115728
			165310	+08.313	33.25	-0.004	-0.17	+0.009	-0.29	+0.011	-0.18	+0.531441	+0.531141	+0.530850
229	230	231	165322	+07.788	56.18	-0.010	+0.31	-0.018	+0.20	-0.015	+0.18	+0.070431	+0.069497	+0.068578
			165285	+36.164	47.10	+0.001	+0.18	+0.007	+0.37	+0.003	+0.38	-0.083261	-0.082710	-0.082161
			165283	+30.279	21.48	-0.013	+0.55	-0.020	+0.51	-0.020	+0.49	+0.462375	+0.462820	+0.463268
			165310	+08.313	33.25	+0.013	-0.44	+0.024	-0.29	+0.021	-0.27	+0.433825	+0.433171	+0.432546
			165282	+29.006	07.60	+0.009	-0.59	+0.007	-0.79	+0.011	-0.78	+0.116630	+0.117221	+0.117770
232	233	234	165316	+48.494	49.68	+0.004	-0.32	-0.000	-0.27	+0.004	-0.19	+0.014693	+0.013798	+0.012877
			165285	+36.164	47.10	-0.020	+0.45	-0.021	+0.30	-0.020	+0.21	-0.079332	-0.079362	-0.079396
			165255	+12.374	44.64	+0.017	-0.34	+0.019	-0.21	+0.017	-0.15	+0.147842	+0.148589	+0.149374
			165283	+30.279	21.48	-0.017	+0.07	-0.023	-0.01	-0.016	-0.01	+0.570317	+0.570760	+0.571185
			165304	+22.857	14.56	+0.016	+0.14	+0.025	+0.19	+0.015	+0.14	+0.346481	+0.346216	+0.345960
235	236	237	165276	+48.171	11.84	+0.010	-0.39	+0.018	-0.09	+0.020	-0.09	-0.004851	-0.004952	-0.005160
			165235	+06.680	37.39	-0.007	+0.87	-0.019	+0.38	-0.023	+0.22	-0.072078	-0.071865	-0.071594
			165218	+55.326	31.17	-0.011	-0.69	-0.009	-0.50	-0.005	-0.18	+0.029339	+0.029899	+0.030493
			165283	+30.279	21.48	-0.013	-0.00	-0.017	-0.15	-0.017	-0.01	+0.652542	+0.651797	+0.651132
			165233	+46.789	30.67	+0.021	+0.21	+0.026	+0.35	+0.025	+0.06	+0.395048	+0.395121	+0.395129
238	239	240	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	+0.232315	+0.232194	+0.232095
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.507262	+0.507967	+0.508642
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	+0.214163	+0.214350	+0.214556
			165282	+29.006	07.60	+0.017	+0.32	+0.029	+0.32	+0.023	+0.24	+0.073512	+0.073295	+0.073109
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	-0.027252	-0.027806	-0.028402

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
241	242	243	165247	+22.373	44.17	-0.046	+0.92	-0.043	+0.78	-0.026	+0.78	+0.556879	+0.557592	+0.558283
			165257	+24.270	54.59	+0.034	-0.89	+0.036	-0.75	+0.011	-0.68	+0.330939	+0.331318	+0.331757
			165299	+06.147	14.57	+0.014	+0.18	+0.003	+0.14	+0.025	+0.00	-0.148942	-0.149516	-0.150177
			165304	+22.857	14.56	-0.050	+0.39	-0.034	+0.33	-0.052	+0.53	-0.037463	-0.038046	-0.038535
			165282	+29.006	07.60	+0.049	-0.60	+0.038	-0.51	+0.043	-0.67	+0.298586	+0.298652	+0.298671
244	245	246	165243	+52.351	19.06	-0.026	+0.29	-0.023	+0.24	-0.029	+0.47	+0.480879	+0.480731	+0.480544
			165220	+03.162	13.35	+0.034	-0.47	+0.032	-0.41	+0.039	-0.72	+0.374306	+0.374777	+0.375257
			165228	+42.174	59.89	-0.015	+0.53	-0.016	+0.50	-0.019	+0.67	+0.081537	+0.082043	+0.082505
			165255	+12.374	44.64	-0.020	-0.47	-0.012	-0.50	-0.016	-0.41	+0.022145	+0.021971	+0.021802
			165282	+29.006	07.60	+0.025	+0.13	+0.019	+0.17	+0.024	-0.01	+0.041133	+0.040478	+0.039892
247	248	249	165232	+44.370	07.76	+0.020	-0.65	+0.021	-0.69	+0.018	-0.58	+0.448945	+0.450032	+0.451124
			165233	+46.789	30.67	-0.027	+0.67	-0.024	+0.67	-0.012	+0.55	+0.490198	+0.491371	+0.492494
			165246	+17.785	42.42	+0.014	+0.03	+0.006	+0.11	-0.016	+0.11	+0.144697	+0.144515	+0.144323
			165257	+24.270	54.59	-0.013	+0.18	-0.009	+0.16	+0.002	+0.12	-0.138331	-0.139653	-0.140995
			165255	+12.374	44.64	+0.005	-0.23	+0.006	-0.25	+0.008	-0.21	+0.054491	+0.053735	+0.052993
250	251	252	165218	+55.326	31.17	-0.023	-0.39	-0.025	-0.11	-0.029	-0.03	+0.309546	+0.310469	+0.311270
			165220	+03.162	13.35	+0.024	-0.23	+0.026	-0.41	+0.030	-0.58	+0.259580	+0.260260	+0.260879
			165232	+44.370	07.76	+0.011	+0.96	+0.011	+0.70	+0.012	+0.76	+0.210410	+0.210287	+0.210063
			165246	+17.785	42.42	-0.005	-0.56	-0.005	-0.42	-0.006	-0.46	+0.089364	+0.086748	+0.085630
			165229	+42.174	59.89	-0.006	+0.23	-0.007	+0.25	-0.008	+0.31	+0.132399	+0.132296	+0.132198
253	254	255	165228	+42.174	59.89	-0.037	-0.07	-0.043	-0.16	-0.042	-0.27	+0.070649	+0.070286	+0.069838
			165233	+46.789	30.67	+0.052	+0.22	+0.066	+0.21	+0.062	+0.40	-0.097992	-0.099276	-0.100605
			165235	+26.680	37.39	-0.032	-0.19	-0.042	-0.13	-0.040	-0.26	-0.023386	-0.024294	-0.025303
			165218	+55.326	31.17	-0.009	+0.17	-0.002	-0.06	-0.005	-0.02	+0.589408	+0.591015	+0.592623
			165220	+03.162	13.35	+0.027	-0.17	+0.021	+0.14	+0.024	+0.16	+0.461182	+0.462269	+0.463347
256	257	258	165218	+55.326	31.17	+0.013	+0.06	+0.020	-0.01	+0.019	+0.05	-0.077727	-0.078995	-0.080223
			165208	+31.387	42.28	-0.028	-0.10	-0.037	-0.03	-0.039	-0.13	+0.103499	+0.103341	+0.103178
			165197	+26.030	27.76	+0.014	+0.01	+0.009	+0.09	+0.018	+0.09	+0.246193	+0.246830	+0.247458
			165184	+40.617	15.35	+0.003	+0.06	+0.016	-0.10	+0.006	-0.02	+0.380028	+0.380782	+0.381600
			165192	+11.658	22.30	-0.002	-0.03	-0.009	+0.05	-0.004	+0.01	+0.748018	+0.748042	+0.347997
259	260	261	165355	+22.790	49.56	+0.002	+0.13	+0.005	+0.11	+0.007	+0.08	+0.347255	+0.348606	+0.349986
			165382	+49.317	46.96	-0.056	+0.06	-0.066	+0.05	-0.060	+0.02	+0.225219	+0.225110	+0.224986
			165388	+20.359	58.80	+0.019	-0.19	+0.019	-0.17	+0.014	-0.14	-0.099622	-0.099812	-0.100047
			146391	+54.236	34.66	+0.045	-0.47	+0.045	-0.42	+0.033	-0.35	+0.345496	+0.345187	+0.344925
			165393	+48.935	40.55	-0.010	+0.47	-0.004	+0.43	+0.005	+0.31	+0.181653	+0.180908	+0.180148
262	263	264	165326	+29.502	22.67	-0.024	+0.65	-0.031	+0.94	-0.034	+0.75	+0.088255	+0.089187	+0.090011
			165337	+53.668	29.54	+0.005	-0.73	+0.006	-0.86	+0.002	-0.75	+0.058248	+0.058690	+0.059165
			165357	+36.708	23.20	+0.015	+0.05	+0.020	-0.08	+0.025	-0.01	-0.132044	-0.131930	-0.131768
			165353	+08.998	28.39	+0.041	-0.43	+0.054	-0.86	+0.064	-0.61	+0.515992	+0.515437	+0.515008
			165373	+52.719	57.67	-0.037	+0.46	-0.048	+0.85	-0.057	+0.61	+0.469540	+0.468616	+0.467584
265	266	267	165335	+45.989	55.88	-0.039	+0.07	-0.027	+0.29	-0.021	+0.24	-0.014053	-0.014274	-0.014524
			165322	+07.788	56.18	+0.028	+0.13	+0.008	-0.25	+0.004	-0.09	+0.024104	+0.024059	+0.024137
			165285	+36.164	47.10	-0.001	-0.09	+0.005	+0.03	+0.005	-0.03	-0.086278	-0.085474	-0.084790
			165325	+28.910	58.30	-0.026	+0.16	-0.025	+0.18	-0.021	+0.21	+0.660734	+0.660595	+0.660453
			165337	+53.668	29.54	+0.038	-0.27	+0.040	-0.25	+0.033	-0.33	+0.415458	+0.415094	+0.414723
268	269	270	165322	+07.788	56.18	+0.020	-0.22	+0.016	-0.18	+0.015	-0.22	+0.192000	+0.193581	+0.195139
			165325	+28.910	58.30	-0.013	+0.18	-0.018	+0.22	-0.014	+0.38	+0.664300	+0.664476	+0.664646
			165337	+53.668	29.54	+0.013	-0.21	+0.026	-0.34	+0.019	-0.68	+0.266766	+0.265911	+0.265061
			165346	+33.015	25.03	+0.017	-0.14	-0.000	+0.04	+0.006	+0.28	-0.056560	-0.057452	-0.058379
			165335	+45.989	55.88	-0.037	+0.39	-0.024	+0.26	-0.026	+0.23	-0.066506	-0.066516	-0.066462

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
271	272	273	165282	+29.006	07.60	+0.029	-0.13	+0.024	-0.33	+0.023	-0.33	-0.202989	-0.202658	-0.202323
			165322	+07.788	56.18	-0.053	+0.19	-0.042	+0.16	-0.045	+0.19	+0.208370	+0.208165	+0.208007
			165285	+36.164	47.10	-0.004	+0.06	-0.006	+0.40	-0.002	+0.38	+0.032033	+0.032319	+0.032531
			165337	+53.668	29.54	+0.035	-0.12	+0.028	-0.13	+0.029	-0.15	+0.560130	+0.559586	+0.559078
			165263	+26.837	14.94	-0.006	+0.01	-0.004	-0.09	-0.005	-0.08	+0.402456	+0.402569	+0.402707
274	275	276	165268	+26.837	14.94	+0.036	-0.44	+0.035	-0.14	+0.040	-0.15	+0.274577	+0.274908	+0.275220
			165316	+48.494	49.68	+0.012	-0.63	+0.011	-0.24	+0.015	-0.19	+0.020259	+0.020393	+0.020481
			165285	+36.164	47.10	-0.052	+0.67	-0.051	+0.21	-0.058	+0.23	-0.021035	-0.020555	-0.019986
			165326	+29.502	22.67	-0.033	+0.21	-0.032	+0.04	-0.036	+0.08	+0.544063	+0.543313	+0.542555
			165322	+07.788	56.18	+0.037	+0.20	+0.027	+0.13	+0.039	+0.03	+0.182135	+0.181941	+0.181731
277	278	279	165255	+12.374	44.64	-0.018	-0.39	-0.012	-0.33	-0.015	-0.41	-0.085876	-0.085376	-0.084959
			165282	+29.006	07.60	+0.024	+0.01	+0.038	-0.03	+0.030	-0.05	+0.012470	+0.012625	+0.012791
			165310	+08.313	33.25	-0.002	+0.45	-0.023	+0.42	-0.012	+0.53	-0.017631	-0.017703	-0.017680
			165322	+07.788	56.18	-0.008	-0.41	+0.005	-0.37	-0.001	-0.46	+0.525987	+0.525447	+0.524925
			165260	+43.997	27.61	+0.004	+0.34	-0.008	+0.31	-0.002	+0.38	+0.565091	+0.565007	+0.564922
280	281	282	165310	+08.313	33.25	-0.007	-0.18	-0.008	-0.19	-0.017	-0.15	-0.663674	-0.663298	-0.663234
			165282	+29.006	07.60	+0.016	+0.31	+0.015	+0.33	+0.035	+0.22	+0.265621	+0.266131	+0.266386
			165335	+45.989	55.88	-0.008	+0.18	+0.000	+0.14	-0.003	+0.24	+0.069182	+0.068542	+0.068146
			165322	+07.788	56.18	+0.017	-0.12	+0.006	-0.07	+0.017	-0.23	+0.454236	+0.453863	+0.453528
			165285	+36.164	47.10	-0.018	-0.18	-0.013	-0.22	-0.032	-0.08	+0.874635	+0.874763	+0.875174
283	284	285	165228	+42.174	59.89	+0.008	+0.25	+0.006	+0.32	+0.006	+0.31	+0.051346	+0.051966	+0.052536
			165255	+12.374	44.64	-0.023	-0.68	-0.017	-0.80	-0.017	-0.75	+0.106193	+0.106270	+0.106368
			165282	+29.006	07.60	+0.017	+0.42	+0.012	+0.27	+0.018	+0.18	+0.084790	+0.084538	+0.084323
			165265	+36.164	47.10	-0.006	-0.07	-0.004	+0.23	-0.012	+0.31	+0.241114	+0.240862	+0.240607
			165268	+26.837	14.95	+0.004	+0.08	+0.003	-0.02	+0.006	-0.05	+0.516557	+0.516364	+0.516167
286	287	288	165257	+24.270	54.59	+0.008	-0.02	+0.009	+0.04	+0.003	-0.03	-0.114491	-0.113900	-0.113272
			165255	+12.374	44.64	+0.015	-0.16	+0.019	-0.19	+0.026	-0.20	+0.582318	+0.582642	+0.582994
			165285	+36.164	47.10	-0.033	+0.29	-0.041	+0.26	-0.045	+0.35	+0.642791	+0.642585	+0.642388
			165310	+08.313	33.25	+0.042	-0.30	+0.051	-0.21	+0.048	-0.38	+0.136758	+0.136234	+0.135645
			165302	+19.080	19.46	-0.031	+0.20	-0.038	+0.10	-0.032	+0.26	-0.247376	-0.247572	-0.247755
289	290	291	165228	+42.174	59.89	-0.032	+0.25	-0.029	+0.22	-0.021	+0.26	+0.320562	+0.321018	+0.321404
			165246	+17.785	42.42	+0.041	-0.48	+0.050	-0.42	+0.031	-0.50	-0.274527	-0.274231	-0.273979
			165255	+12.374	44.63	+0.026	+0.04	+0.004	+0.02	+0.010	+0.02	+0.415380	+0.415317	+0.415251
			165265	+36.164	47.10	+0.008	-0.26	+0.023	-0.22	+0.011	-0.26	+0.664835	+0.664372	+0.663936
			165283	+30.279	21.48	-0.042	+0.45	-0.048	+0.39	-0.031	+0.47	-0.126250	-0.126477	-0.126612
292	293	294	165283	+30.279	21.48	-0.003	+0.15	-0.007	+0.11	-0.002	+0.01	-0.593734	-0.593599	-0.593674
			165220	+03.162	13.35	+0.011	+0.01	+0.013	+0.04	+0.008	+0.10	+0.196592	+0.197120	+0.197676
			165285	+36.164	47.10	+0.021	+0.27	+0.019	+0.27	+0.015	+0.25	+0.626099	+0.625917	+0.625736
			165282	+29.006	07.60	+0.001	-0.42	+0.010	-0.33	+0.000	-0.10	+0.180874	+0.180692	+0.180604
			165255	+12.374	44.63	-0.029	-0.00	-0.035	-0.09	-0.021	-0.26	+0.589809	+0.589871	+0.589857
295	296	297	165385	+22.010	51.06	-0.000	+0.30	-0.002	+0.39	-0.007	+0.31	+0.289546	+0.289377	+0.289203
			165384	+16.909	08.06	+0.015	-0.14	+0.019	-0.24	+0.014	-0.16	+0.059454	+0.058486	+0.057501
			165339	+02.030	37.02	-0.037	+0.14	-0.046	+0.32	-0.033	+0.17	+0.089203	+0.089375	+0.089590
			165343	+26.639	51.64	+0.052	-0.06	+0.064	-0.27	+0.045	-0.10	+0.232919	+0.233535	+0.234135
			165372	+51.654	01.14	-0.029	-0.23	-0.034	-0.20	-0.023	-0.22	+0.328878	+0.329227	+0.329571
298	299	300	165384	+16.909	08.06	+0.009	+0.12	+0.012	+0.20	+0.005	+0.09	+0.635705	+0.636481	+0.637400
			165374	+58.269	57.66	-0.010	-0.01	-0.009	+0.04	-0.010	+0.31	-0.073190	-0.073004	-0.073037
			165398	+19.056	07.23	+0.006	-0.14	+0.000	-0.35	+0.011	-0.70	+0.204802	+0.204921	+0.205067
			165425	+57.713	21.16	-0.033	-0.20	-0.035	-0.21	-0.027	+0.46	+0.232312	+0.231918	+0.231463
			165423	+56.104	43.91	+0.028	+0.24	+0.032	+0.33	+0.021	-0.16	+0.000370	-0.000316	-0.000893

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
301	302	303	165354	+10.844	57.00	-0.008	+0.03	-0.006	+0.05	-0.008	+0.03	-0.160101	-0.160747	-0.161399
			165389	+31.529	18.38	+0.037	-0.15	+0.032	-0.22	+0.037	-0.14	+0.283062	+0.282498	+0.281908
			165384	+16.909	08.06	+0.010	-0.12	+0.015	+0.05	+0.012	-0.02	+0.371890	+0.371784	+0.371700
			165381	+44.896	28.35	-0.053	+0.31	-0.054	+0.20	-0.056	+0.19	+0.333516	+0.333564	+0.333592
			165329	+02.030	37.02	+0.014	-0.07	+0.013	-0.08	+0.015	-0.06	+0.171632	+0.172901	+0.174199
304	305	306	165381	+44.896	28.35	+0.014	-0.35	+0.018	-0.43	+0.013	-0.47	+0.800899	+0.800661	+0.800422
			165374	+58.269	57.66	+0.014	+0.62	+0.008	+0.63	+0.012	+0.71	+0.014949	+0.014125	+0.013294
			165354	+10.844	57.00	-0.056	-0.58	-0.051	-0.45	-0.051	-0.54	-0.010157	-0.010300	-0.010418
			165332	+14.191	59.49	+0.035	-0.19	+0.038	-0.33	+0.033	-0.33	-0.246289	-0.245869	-0.245510
			165339	+02.030	37.02	-0.007	+0.50	-0.012	+0.57	-0.007	+0.63	+0.440599	+0.441382	+0.442211
307	308	309	165327	+45.163	28.22	+0.017	-0.13	+0.016	-0.19	+0.017	-0.21	+0.985783	+0.986055	+0.986318
			165320	+51.654	00.80	-0.038	+0.16	-0.035	+0.30	-0.041	+0.33	-0.203777	-0.203443	-0.203114
			165330	+55.440	24.81	+0.035	+0.13	+0.028	-0.01	+0.043	-0.00	-0.557877	-0.557731	-0.557516
			165347	+43.133	03.29	-0.007	-0.35	-0.001	-0.31	-0.015	-0.36	-0.146487	-0.146657	-0.146905
			165374	+58.269	57.66	-0.006	+0.19	-0.008	+0.21	-0.003	+0.23	+0.922357	+0.921775	+0.921217
310	311	312	165339	+02.030	37.02	+0.040	+0.49	+0.032	+0.69	+0.037	+0.68	-0.278605	-0.279690	-0.280687
			165343	+26.639	51.64	-0.005	-0.17	-0.009	-0.50	-0.004	-0.28	+0.191157	+0.191213	+0.191079
			165372	+51.654	01.14	-0.020	-0.20	-0.014	-0.15	-0.019	-0.25	+0.024344	+0.023726	+0.023170
			165329	+54.270	48.85	+0.026	+0.33	+0.021	+0.50	+0.024	+0.46	+0.835884	+0.837235	+0.838733
			165319	+49.399	39.88	-0.040	-0.45	-0.030	-0.54	-0.038	-0.61	+0.227221	+0.227416	+0.227706
313	314	315	165384	+16.909	08.06	+0.009	+0.12	+0.012	+0.20	+0.005	+0.09	+0.692274	+0.692483	+0.692685
			165374	+58.269	57.66	-0.010	-0.01	-0.009	+0.04	-0.010	+0.21	-0.064403	-0.063471	-0.062594
			165398	+19.056	07.23	+0.006	-0.14	+0.000	-0.35	+0.011	-0.70	+0.209354	+0.210011	+0.210200
			165425	+57.713	21.16	-0.033	-0.20	-0.035	-0.21	-0.027	+0.46	+0.207427	+0.206732	+0.205906
			165427	+56.104	43.91	+0.028	+0.24	+0.032	+0.33	+0.021	-0.16	-0.043152	-0.045756	-0.046197
316	317	318	165354	+10.844	57.00	-0.008	+0.03	-0.006	+0.05	-0.008	+0.03	+0.156843	+0.157086	+0.157349
			165389	+31.529	18.38	+0.037	-0.15	+0.032	-0.22	+0.037	-0.14	+0.223291	+0.222692	+0.222085
			165384	+16.909	08.06	+0.010	-0.12	+0.015	+0.05	+0.012	-0.02	+0.227935	+0.227519	+0.227093
			165381	+44.896	28.35	-0.053	+0.31	-0.054	+0.20	-0.056	+0.19	+0.219868	+0.219622	+0.219366
			165339	+02.030	37.02	+0.014	-0.07	+0.013	-0.08	+0.015	-0.06	+0.172063	+0.173081	+0.174106
319	320	321	165381	+44.896	28.35	+0.014	-0.35	+0.018	-0.43	+0.013	-0.47	+0.445786	+0.445044	+0.444306
			165374	+58.269	57.66	+0.014	+0.62	+0.008	+0.63	+0.012	+0.71	+0.069891	+0.069263	+0.068636
			165354	+10.844	57.00	-0.056	-0.58	-0.051	-0.45	-0.051	-0.54	+0.100662	+0.100705	+0.100764
			165332	+14.191	59.49	+0.035	-0.19	+0.038	-0.33	+0.033	-0.33	+0.029120	+0.029878	+0.030606
			165339	+02.030	37.02	-0.007	+0.50	-0.012	+0.57	-0.007	+0.63	+0.354541	+0.355110	+0.355687
322	323	324	165327	+45.163	28.22	+0.017	-0.13	+0.016	-0.19	+0.017	-0.21	+0.632061	+0.631985	+0.631923
			165320	+51.654	00.80	-0.038	+0.16	-0.035	+0.30	-0.041	+0.33	+0.029592	+0.030124	+0.030653
			165330	+55.440	24.81	+0.035	+0.13	+0.028	-0.01	+0.043	-0.00	-0.176665	-0.176184	-0.175689
			165347	+43.133	03.29	-0.007	-0.35	-0.001	-0.31	-0.015	-0.36	+0.001529	+0.001496	+0.001420
			165374	+58.269	57.66	-0.006	+0.19	-0.008	+0.21	-0.003	+0.23	+0.513483	+0.512579	+0.511692
325	326	327	165319	+49.399	39.88	-0.056	+0.27	-0.051	-0.14	-0.039	-0.20	+0.382734	+0.383566	+0.384224
			165339	+02.030	37.02	+0.050	-0.26	+0.046	+0.09	+0.036	+0.15	+0.338988	+0.337954	+0.337110
			165354	+10.844	57.00	-0.043	+0.28	-0.040	+0.01	-0.034	-0.07	+0.035493	+0.034213	+0.033133
			165332	+14.191	59.49	+0.024	-0.27	+0.023	-0.18	+0.026	-0.08	+0.073923	+0.074188	+0.074410
			165320	+51.654	00.80	+0.025	-0.02	+0.022	+0.21	+0.012	+0.19	+0.168862	+0.170079	+0.171123
328	329	330	165257	+24.270	54.59	-0.045	-0.50	-0.053	-0.56	-0.062	-0.53	-0.050502	-0.049889	-0.049296
			165265	+13.017	21.14	+0.015	-0.09	+0.022	+0.09	+0.024	+0.01	+0.261143	+0.261627	+0.262156
			165281	+27.431	59.28	+0.029	+0.64	+0.029	+0.48	+0.037	+0.55	+0.377042	+0.377231	+0.377433
			165317	+48.650	27.55	-0.044	-0.62	-0.050	-0.60	-0.059	-0.60	+0.401811	+0.400991	+0.400172
			165299	+06.147	14.57	+0.044	+0.57	+0.051	+0.58	+0.060	+0.57	+0.010506	+0.010040	+0.009536

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
331	332	333	165231	+16.959	03.65	-0.004	-0.16	-0.001	-0.28	-0.010	-0.13	+0.487168	+0.487946	+0.488664
			165266	+19.363	04.37	+0.010	+0.23	+0.010	+0.29	+0.020	+0.15	+0.480592	+0.479621	+0.478724
			165257	+24.270	54.59	-0.012	-0.33	-0.009	-0.48	-0.024	-0.24	+0.028386	+0.027766	+0.027114
			165235	+06.680	37.39	-0.018	-0.02	-0.031	+0.29	-0.026	+0.10	+0.064598	+0.064902	+0.065260
			165232	+44.370	07.76	+0.024	+0.29	+0.032	+0.17	+0.041	+0.12	-0.060744	-0.060236	-0.059762
334	335	336	165384	+16.909	08.06	+0.009	+0.12	+0.012	+0.20	+0.005	+0.09	+0.683146	+0.683377	+0.683737
			165374	+58.269	57.66	-0.010	-0.01	-0.009	+0.04	-0.010	+0.31	-0.021520	-0.020608	-0.019818
			165398	+19.056	07.23	+0.006	-0.14	+0.000	-0.35	+0.011	-0.70	+0.213472	+0.213627	+0.213813
			165425	+57.713	21.16	-0.033	-0.20	-0.035	-0.21	-0.027	+0.46	+0.182331	+0.181644	+0.180829
			165423	+56.104	43.91	+0.028	+0.24	+0.032	+0.33	+0.021	-0.16	-0.057430	-0.058040	-0.058561
337	338	339	165354	+10.844	57.00	-0.008	+0.03	-0.006	+0.05	-0.008	+0.03	+0.160206	+0.160353	+0.160504
			165389	+31.529	18.38	+0.037	-0.15	+0.032	-0.22	+0.037	-0.14	+0.196962	+0.196319	+0.195673
			165384	+16.909	08.06	+0.010	-0.12	+0.015	+0.05	+0.012	-0.02	+0.212277	+0.211867	+0.211462
			165381	+44.896	28.35	-0.053	+0.31	-0.054	+0.20	-0.056	+0.19	+0.211212	+0.210983	+0.210751
			165339	+02.030	37.02	+0.014	-0.07	+0.013	-0.08	+0.015	-0.06	+0.219343	+0.220477	+0.221610
340	341	342	165781	+44.896	28.35	+0.014	-0.35	+0.018	-0.43	+0.013	-0.47	+0.420165	+0.419441	+0.418701
			165374	+58.269	57.66	+0.014	+0.62	+0.008	+0.63	+0.012	+0.71	+0.036262	+0.035629	+0.035012
			165354	+10.844	57.00	-0.056	-0.58	-0.051	-0.45	-0.051	-0.54	+0.099416	+0.099450	+0.099514
			165332	+14.191	59.49	+0.035	-0.19	+0.038	-0.33	+0.033	-0.33	+0.057048	+0.057795	+0.058524
			165339	+02.030	37.02	-0.037	+0.50	-0.012	+0.57	-0.007	+0.63	+0.387109	+0.387685	+0.388248
343	344	345	165327	+45.163	28.22	+0.017	-0.13	+0.016	-0.19	+0.017	-0.21	+0.642983	+0.642807	+0.642821
			165320	+51.654	00.80	-0.038	+0.16	-0.035	+0.30	-0.041	+0.33	+0.056404	+0.056956	+0.057490
			165330	+55.440	24.81	+0.035	+0.17	+0.028	-0.01	+0.043	-0.00	-0.162075	-0.161571	-0.161028
			165347	+43.133	03.29	-0.007	-0.35	-0.001	-0.31	-0.015	-0.36	-0.208236	-0.208318	-0.208384
			165374	+58.269	57.66	-0.006	+0.19	-0.008	+0.21	-0.003	+0.23	+0.470934	+0.469996	+0.469101
346	347	348	165319	+49.399	39.88	-0.056	+0.27	-0.051	-0.14	-0.039	-0.20	+0.430897	+0.431742	+0.432408
			165339	+02.030	37.02	+0.050	-0.26	+0.046	+0.09	+0.036	+0.15	+0.338302	+0.337347	+0.336569
			165354	+10.844	57.00	-0.043	+0.28	-0.040	+0.01	-0.034	-0.07	-0.021658	-0.022916	-0.023989
			165332	+14.191	59.49	+0.024	-0.27	+0.023	-0.19	+0.026	-0.08	+0.059797	+0.060016	+0.060200
			165320	+51.654	00.80	+0.025	-0.02	+0.022	+0.21	+0.012	+0.19	+0.192662	+0.193812	+0.194812
349	350	351	165257	+24.270	54.59	-0.045	-0.50	-0.053	-0.56	-0.062	-0.53	-0.051613	-0.051057	-0.050504
			165265	+13.017	21.14	+0.015	-0.09	+0.022	+0.09	+0.024	+0.01	+0.293146	+0.293599	+0.294078
			165281	+27.431	59.28	+0.029	+0.64	+0.029	+0.49	+0.037	+0.55	+0.407667	+0.407861	+0.408033
			165317	+48.650	27.55	-0.044	-0.62	-0.050	-0.60	-0.059	-0.60	+0.386937	+0.386187	+0.385432
			165299	+06.147	14.57	+0.044	+0.57	+0.051	+0.58	+0.060	+0.57	-0.036137	-0.036590	-0.037039
352	353	354	165231	+16.959	03.65	-0.004	-0.16	-0.001	-0.28	-0.010	-0.13	+0.532078	+0.532786	+0.533499
			165266	+19.363	04.37	+0.010	+0.23	+0.010	+0.29	+0.020	+0.15	+0.506694	+0.505814	+0.504931
			165257	+24.270	54.59	-0.012	-0.33	-0.009	-0.48	-0.024	-0.24	-0.000358	-0.000915	-0.001567
			165235	+06.680	37.39	-0.018	-0.02	-0.031	+0.29	-0.026	+0.10	+0.050798	+0.051064	+0.051420
			165232	+44.370	07.76	+0.024	+0.29	+0.032	+0.17	+0.041	+0.12	-0.089211	-0.088749	-0.088282
355	356	357	165398	+19.056	07.23	+0.023	+0.27	+0.026	+0.21	+0.026	-0.13	+0.166597	+0.168148	+0.169683
			165425	+57.713	21.16	-0.007	-0.39	-0.011	-0.35	-0.006	+0.22	+0.475427	+0.475222	+0.474986
			165423	+56.104	43.91	-0.029	+0.19	-0.029	+0.23	-0.037	-0.16	+0.379365	+0.378530	+0.377730
			165390	+31.541	11.32	-0.032	-0.28	-0.036	-0.20	-0.037	+0.12	-0.151231	-0.150759	-0.150305
			165414	+51.608	24.28	+0.046	+0.21	+0.049	+0.11	+0.054	-0.05	+0.129842	+0.128859	+0.127907
358	359	360	165385	+22.010	51.06	-0.000	+0.30	-0.002	+0.39	-0.003	+0.31	-0.053132	-0.053327	-0.053540
			165384	+16.909	08.06	+0.015	-0.14	+0.019	-0.24	+0.014	-0.16	+0.034674	+0.033607	+0.032606
			165339	+02.030	37.02	-0.037	+0.14	-0.046	+0.32	-0.033	+0.17	+0.505751	+0.506001	+0.506220
			165343	+26.639	51.64	+0.052	-0.06	+0.064	-0.27	+0.045	-0.10	+0.409248	+0.409884	+0.410567
			165372	+51.654	01.14	-0.029	-0.23	-0.034	-0.20	-0.023	-0.22	+0.103460	+0.103835	+0.104147

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
361	362	363	165338	+58.121	56.80	+0.021	-0.67	+0.025	-0.53	+0.024	-0.46	+0.308393	+0.308046	+0.307704
			165328	+51.216	23.99	+0.027	+0.01	+0.039	-0.04	+0.015	-0.06	+0.315848	+0.315976	+0.316164
			165302	+19.080	19.46	-0.026	+0.32	-0.034	+0.28	-0.021	+0.26	+0.575496	+0.576250	+0.576916
			165354	+10.844	57.00	+0.007	-0.25	+0.008	-0.20	+0.009	-0.17	-0.161345	-0.161162	-0.160960
			165366	+29.066	24.65	-0.029	+0.59	-0.037	+0.49	-0.027	+0.43	-0.038393	-0.039109	-0.039823
364	365	366	165338	+58.121	56.80	+0.002	-0.23	+0.001	-0.16	+0.000	-0.25	+0.202584	+0.201452	+0.200443
			165328	+51.216	23.99	-0.010	+0.59	-0.007	+0.40	-0.005	+0.67	+0.039924	+0.035653	+0.035482
			165330	+55.440	24.81	+0.009	-0.24	+0.007	-0.14	+0.005	-0.29	-0.225880	-0.225654	-0.225672
			165302	+19.080	19.46	-0.018	-0.35	-0.018	-0.35	-0.017	-0.30	+0.437475	+0.438091	+0.438710
			165299	+06.147	14.57	+0.018	+0.23	+0.017	+0.25	+0.016	+0.16	+0.549897	+0.550459	+0.551036
367	368	369	165300	+09.759	32.13	-0.011	-0.24	-0.012	-0.16	-0.010	-0.17	+0.839584	+0.840515	+0.841428
			165354	+10.844	57.00	-0.027	+0.01	-0.022	+0.05	-0.024	+0.07	-0.221075	-0.221246	-0.221377
			165332	+14.191	59.49	+0.026	+0.48	+0.028	+0.33	+0.024	+0.33	+0.143025	+0.143446	+0.143911
			165338	+58.121	56.80	-0.002	+0.50	+0.006	+0.39	-0.001	+0.41	+0.248724	+0.247983	+0.247266
			165347	+43.133	03.29	+0.014	-0.75	+0.001	-0.60	+0.011	-0.64	-0.010258	-0.010698	-0.011229
370	371	372	165338	+58.121	56.80	+0.008	-0.04	-0.001	+0.03	-0.013	+0.12	+0.139318	+0.138920	+0.138549
			165320	+51.654	00.80	+0.007	-0.01	+0.001	+0.04	-0.006	+0.08	+0.096262	+0.096655	+0.097044
			165330	+55.440	24.81	-0.010	-0.07	-0.009	-0.10	-0.012	+0.01	+0.099211	+0.099160	+0.099148
			165347	+43.133	03.29	-0.003	+0.08	+0.005	+0.02	+0.000	-0.13	-0.348138	-0.348739	-0.349383
			165299	+06.147	14.57	-0.002	+0.04	+0.003	+0.01	+0.010	-0.07	+1.013348	+1.014004	+1.014641
373	374	375	165328	+51.216	23.99	-0.008	-0.11	-0.005	-0.20	+0.007	-0.23	+0.028033	+0.027174	+0.026399
			165299	+06.147	14.57	-0.002	+0.32	-0.007	+0.45	-0.021	+0.40	+0.474774	+0.474677	+0.474589
			165332	+14.191	59.49	+0.031	-0.41	+0.034	-0.42	+0.028	-0.21	-0.208236	-0.208498	-0.208673
			165320	+51.654	00.80	-0.030	+0.51	-0.035	+0.56	-0.034	+0.34	-0.024679	-0.024393	-0.024172
			165276	+48.171	11.84	+0.009	-0.31	+0.013	-0.39	+0.020	-0.30	+0.730110	+0.731039	+0.731847
376	377	378	165299	+06.147	14.57	+0.012	+0.82	+0.014	+0.72	+0.026	+0.61	+0.167469	+0.166723	+0.165953
			165257	+24.270	54.59	-0.042	-0.30	-0.041	-0.50	-0.035	-0.59	+0.486869	+0.487163	+0.487440
			165276	+48.171	11.84	+0.052	-0.80	+0.050	-0.30	+0.018	+0.04	+0.293185	+0.293445	+0.293740
			165273	+41.643	02.78	-0.002	+0.82	-0.000	+0.64	+0.017	+0.48	+0.197919	+0.198607	+0.199320
			165320	+51.654	00.80	-0.022	-0.55	-0.022	-0.57	-0.027	-0.54	-0.145439	-0.145958	-0.146452
379	380	381	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	-0.106647	-0.105835	-0.105048
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.219906	+0.219706	+0.219544
			165276	+48.171	11.84	+0.010	-0.51	+0.015	-0.15	+0.017	-0.20	+0.440135	+0.439455	+0.438736
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.249883	+0.249764	+0.249665
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.196723	+0.196908	+0.197102
382	383	384	165257	+24.270	54.59	-0.045	-0.50	-0.053	-0.56	-0.062	-0.53	+0.674159	+0.674500	+0.674833
			165265	+13.017	21.14	+0.015	-0.09	+0.022	+0.09	+0.024	+0.01	+0.467488	+0.467966	+0.468470
			165281	+27.431	59.28	+0.029	+0.64	+0.029	+0.48	+0.037	+0.55	+0.225269	+0.225580	+0.225894
			165317	+48.650	27.55	-0.044	-0.62	-0.050	-0.60	-0.059	-0.60	-0.372436	-0.372959	-0.373467
			165299	+06.147	14.57	+0.044	+0.57	+0.051	+0.58	+0.060	+0.57	+0.005520	+0.004913	+0.004270
385	386	387	165235	+06.680	37.39	-0.024	-0.17	-0.034	+0.15	-0.036	-0.01	+0.136281	+0.135806	+0.135335
			165232	+44.370	07.76	+0.033	+0.12	+0.042	+0.01	+0.043	-0.01	+0.162957	+0.162704	+0.162462
			165212	+54.891	52.39	+0.030	-0.06	+0.030	+0.32	+0.030	-0.04	+0.250790	+0.251157	+0.251507
			165205	+13.797	52.63	-0.025	+0.02	-0.026	-0.21	-0.026	+0.03	+0.306823	+0.307702	+0.308551
			165231	+16.959	03.65	-0.014	+0.10	-0.011	-0.28	-0.010	+0.03	+0.143148	+0.142631	+0.142145
388	389	390	165385	+22.010	51.06	-0.000	+0.30	-0.002	+0.39	-0.003	+0.31	+0.295543	+0.295067	+0.294594
			165384	+16.909	08.06	+0.015	-0.14	+0.019	-0.24	+0.014	-0.16	+0.637859	+0.637180	+0.636432
			165339	+02.030	37.02	-0.037	+0.14	-0.046	+0.32	-0.033	+0.17	+0.089571	+0.090151	+0.090714
			165343	+26.639	51.64	+0.052	-0.06	+0.064	-0.27	+0.045	-0.10	-0.080715	-0.080121	-0.079518
			165372	+51.654	01.14	-0.029	-0.23	-0.034	-0.20	-0.023	-0.22	+0.057743	+0.057723	+0.057779

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
391	392	393	165876	+26.190	55.97	-0.021	+0.07	-0.022	-0.10	-0.016	+0.17	+0.811387	+0.810537	+0.809818
			165829	+43.165	07.16	-0.024	+0.07	-0.027	-0.18	-0.022	+0.14	-0.375422	-0.374795	-0.374000
			165858	+57.948	11.31	+0.005	-0.03	+0.004	-0.12	-0.004	-0.15	+0.661806	+0.660860	+0.659854
			165850	+17.954	40.03	+0.041	-0.11	+0.048	+0.54	+0.051	-0.05	+0.106315	+0.106633	+0.106645
			165857	+53.612	51.16	-0.001	-0.01	-0.003	-0.15	-0.009	-0.11	-0.204085	-0.203236	-0.202317
394	395	396	165889	+21.602	40.36	-0.033	+0.26	-0.045	+0.77	-0.014	+0.62	+0.503491	+0.503369	+0.503049
			165896	+04.647	53.24	+0.022	-0.54	+0.027	-0.96	+0.009	-0.84	+0.505808	+0.505063	+0.504564
			165915	+58.656	47.30	-0.002	+0.12	-0.002	+0.17	-0.001	+0.16	-0.199837	-0.200400	-0.201056
			165876	+26.190	55.97	+0.015	+0.45	+0.026	+0.33	+0.007	+0.38	+0.301470	+0.301747	+0.302119
			165871	+35.236	34.78	-0.002	-0.28	-0.006	-0.31	-0.001	-0.31	-0.110933	-0.109778	-0.108677
397	398	399	165857	+53.612	51.16	+0.018	-0.26	+0.020	-0.09	+0.017	+0.18	+0.327858	+0.327786	+0.327682
			165862	+47.147	34.46	-0.018	+0.10	-0.014	+0.03	-0.016	-0.02	+0.455644	+0.454694	+0.453623
			165850	+17.954	40.03	+0.017	+0.05	+0.009	+0.02	+0.015	-0.12	+0.241731	+0.241478	+0.241232
			165829	+43.165	07.16	+0.000	-0.06	+0.003	-0.03	+0.001	+0.07	-0.130764	-0.130167	-0.129493
			165844	+20.654	18.62	-0.018	+0.19	-0.017	+0.07	-0.016	-0.11	+0.105531	+0.106208	+0.106956
400	401	402	165846	+41.599	51.69	+0.000	-0.15	-0.006	-0.23	-0.005	-0.13	+0.746610	+0.746205	+0.745840
			165809	+46.499	11.33	-0.010	+0.45	+0.007	+0.56	+0.004	+0.47	+0.045457	+0.045900	+0.046291
			165802	+49.367	36.82	+0.022	-0.48	+0.003	-0.48	+0.006	-0.61	-0.130050	-0.129679	-0.129270
			165810	+57.926	22.20	-0.020	+0.10	-0.017	-0.08	-0.017	+0.27	-0.016959	-0.016895	-0.016864
			165829	+43.165	07.16	+0.008	+0.09	+0.013	+0.23	+0.011	+0.00	+0.354942	+0.354470	+0.354003
403	404	405	165858	+57.948	11.31	+0.017	+1.22	+0.018	+1.23	+0.017	+1.21	-0.056029	-0.056896	-0.057722
			165850	+17.954	40.03	-0.071	-0.14	-0.071	-0.07	-0.074	-0.12	+0.092926	+0.092609	+0.092305
			165857	+53.612	51.16	+0.050	-2.17	+0.048	-2.23	+0.060	-2.14	-0.072176	-0.072702	-0.073289
			165829	+43.165	07.16	+0.023	-0.90	+0.022	-0.94	+0.027	-0.90	+0.735289	+0.736511	+0.737713
			165844	+20.654	18.62	-0.019	+1.95	-0.017	+2.01	-0.027	+1.95	+0.300000	+0.300478	+0.300993
406	407	408	165862	+47.147	34.46	-0.026	-0.36	-0.039	-0.31	-0.030	-0.23	-0.212204	-0.212635	-0.213099
			165850	+17.954	40.03	+0.001	-0.03	+0.004	-0.01	+0.003	-0.07	-0.002752	-0.002982	-0.003196
			165829	+43.165	07.16	+0.045	+0.66	+0.065	+0.55	+0.048	+0.49	+0.335270	+0.335350	+0.335524
			165844	+20.654	18.62	+0.011	+0.17	+0.016	+0.14	+0.012	+0.14	+0.158153	+0.158139	+0.158121
			165810	+57.926	22.20	-0.031	-0.45	-0.045	-0.38	-0.034	-0.32	+0.721534	+0.722127	+0.722650
409	410	411	165810	+57.926	22.20	-0.026	+0.16	-0.012	+0.21	-0.017	+0.04	+0.377777	+0.375891	+0.374474
			165802	+49.367	36.82	+0.006	-0.09	-0.002	-0.14	+0.002	-0.03	+0.295284	+0.295746	+0.296110
			165800	+45.598	54.03	+0.013	-0.22	-0.005	-0.32	+0.004	-0.07	+0.182770	+0.181998	+0.181489
			165796	+16.291	05.04	+0.038	+0.04	+0.041	+0.12	+0.034	+0.05	+0.147959	+0.148291	+0.148522
			165788	+09.390	54.45	-0.030	+0.11	-0.021	+0.12	-0.022	+0.01	-0.003750	-0.001926	-0.000594
412	413	414	165809	+46.499	11.33	-0.041	+0.13	-0.025	+0.17	-0.026	+0.07	+0.073259	+0.073120	+0.073006
			165802	+49.367	36.82	+0.054	-0.31	+0.031	-0.31	+0.033	-0.33	+0.227553	+0.227755	+0.227921
			165810	+57.926	22.20	+0.022	+0.35	+0.020	+0.17	+0.020	+0.67	+0.204043	+0.203995	+0.203974
			165829	+43.165	07.16	-0.008	-0.14	-0.008	-0.07	-0.008	-0.27	-0.015817	-0.016496	-0.017191
			165788	+09.390	54.45	-0.027	-0.02	-0.019	+0.05	-0.019	-0.14	+0.510963	+0.511626	+0.512290
415	416	417	165359	+50.853	58.17	+0.018	-0.22	-0.015	-0.03	+0.025	+0.08	+0.868279	+0.867751	+0.867456
			165337	+53.668	29.54	+0.031	-0.36	+0.019	-0.58	+0.035	-0.15	-0.281788	-0.281994	-0.282238
			165357	+36.708	23.20	-0.033	+0.40	+0.012	+0.24	-0.043	-0.05	+0.366671	+0.366333	+0.365768
			165310	+08.313	33.25	+0.005	-0.06	+0.023	-0.33	+0.003	-0.15	+0.245684	+0.246580	+0.247211
			165322	+07.788	56.18	-0.020	+0.24	-0.040	+0.71	-0.019	+0.27	-0.192846	-0.198671	-0.198197
418	419	420	165390	+31.541	11.32	-0.010	+0.81	-0.022	+0.77	-0.024	+0.92	+0.602672	+0.601759	+0.600935
			165374	+58.269	57.66	-0.056	-0.12	-0.048	-0.15	-0.052	-0.09	+0.057959	+0.058070	+0.058187
			165398	+19.056	07.23	+0.039	-0.75	+0.047	-0.70	+0.050	-0.88	-0.121293	-0.121567	-0.121926
			165338	+58.121	56.80	+0.021	-0.52	+0.027	-0.49	+0.029	-0.61	+0.754671	+0.754804	+0.754914
			165354	+10.844	57.00	+0.007	+0.60	-0.004	+0.57	-0.004	+0.67	-0.294009	-0.293066	-0.292110

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	"	S	"	S	"	S	"			
421	422	423	165338	+56.121	56.80	+0.021	-0.67	+0.025	-0.53	+0.024	-0.46	+0.483321	+0.483062	+0.482813
			165328	+51.216	23.99	+0.027	+0.01	+0.039	-0.04	+0.015	-0.06	+0.200130	+0.200261	+0.200369
			165302	+19.080	19.46	-0.026	+0.32	-0.034	+0.28	-0.021	+0.26	+0.065967	+0.066592	+0.067154
			165354	+10.844	57.00	+0.007	-0.25	+0.008	-0.20	+0.009	-0.17	-0.179195	-0.179061	-0.178927
			165366	+29.066	24.65	-0.029	+0.59	-0.037	+0.49	-0.027	+0.43	+0.429777	+0.429146	+0.428590
424	425	426	165338	+58.121	56.80	+0.002	-0.23	+0.001	-0.16	+0.000	-0.25	+0.796676	+0.795949	+0.795164
			165328	+51.216	23.99	-0.010	+0.59	-0.007	+0.40	-0.005	+0.67	+0.248521	+0.248247	+0.248098
			165330	+55.440	24.81	+0.009	-0.24	+0.007	-0.14	+0.005	-0.29	-0.053076	-0.053114	-0.053318
			165302	+19.080	19.46	-0.018	-0.35	-0.018	-0.35	-0.017	-0.30	-0.032429	-0.031916	-0.031339
			165299	+06.147	14.57	+0.018	+0.23	+0.017	+0.25	+0.016	+0.16	+0.040307	+0.040834	+0.041395
427	428	429	165300	+09.759	32.13	-0.011	-0.24	-0.012	-0.16	-0.010	-0.17	+0.151460	+0.152721	+0.153037
			165354	+10.844	57.00	-0.027	+0.01	-0.022	+0.05	-0.024	+0.07	-0.051065	-0.051249	-0.051385
			165332	+14.191	59.49	+0.026	+0.48	+0.028	+0.33	+0.024	+0.33	-0.120809	-0.120500	-0.120184
			165338	+58.121	56.80	-0.002	+0.50	+0.006	+0.39	-0.001	+0.41	+0.686666	+0.686087	+0.685567
			165347	+43.133	03.29	+0.014	-0.75	+0.001	-0.60	+0.011	-0.64	+0.333747	+0.333341	+0.332965
430	431	432	165330	+55.440	24.81	+0.016	-0.35	+0.017	-0.54	+0.015	-0.36	+0.167908	+0.168866	+0.169865
			165347	+43.133	03.29	-0.002	+0.16	+0.007	+0.04	-0.002	+0.22	+0.145482	+0.145346	+0.145290
			165374	+58.269	57.66	-0.001	-0.01	-0.005	+0.06	-0.001	-0.04	-0.207700	-0.208122	-0.208550
			165338	+58.121	56.80	+0.008	-0.19	+0.007	-0.26	+0.008	-0.20	+0.549955	+0.549139	+0.548239
			165328	+51.216	23.99	-0.021	+0.40	-0.026	+0.69	-0.020	+0.38	+0.344265	+0.344772	+0.345156
433	434	435	165335	+45.989	55.88	-0.008	+0.09	-0.029	+0.19	-0.019	+0.32	+0.385904	+0.385304	+0.384814
			165322	+07.788	56.18	-0.002	+0.03	+0.011	-0.12	+0.003	-0.27	-0.057341	-0.057461	-0.057639
			165285	+36.164	47.10	+0.004	-0.05	+0.005	+0.01	+0.005	+0.06	-0.608574	-0.608235	-0.607867
			165283	+30.279	21.48	-0.013	+0.15	-0.028	+0.14	-0.022	+0.16	+0.617086	+0.617430	+0.617805
			165310	+06.313	33.25	+0.018	-0.22	+0.042	-0.21	+0.037	-0.27	+0.742926	+0.742962	+0.742887
436	437	438	165328	+51.216	23.99	-0.019	+0.14	-0.012	+0.12	-0.008	-0.05	+0.602209	+0.601381	+0.600641
			165354	+10.844	57.00	+0.014	+0.04	+0.008	+0.04	+0.006	+0.14	-0.005269	-0.006005	-0.006582
			165332	+14.191	59.49	+0.002	-0.31	+0.002	-0.28	+0.001	-0.20	+0.003479	+0.003587	+0.003696
			165320	+51.654	00.80	-0.014	+0.22	-0.009	+0.20	-0.006	+0.04	-0.156386	-0.155400	-0.154605
			165299	+06.147	14.57	+0.017	-0.09	+0.010	-0.08	+0.007	+0.07	+0.555968	+0.556477	+0.556852
439	440	441	165299	+06.147	14.57	+0.012	+0.82	+0.014	+0.72	+0.026	+0.61	+0.775578	+0.775011	+0.774445
			165257	+24.270	54.59	-0.042	-0.30	-0.041	-0.50	-0.035	-0.59	+0.195099	+0.195329	+0.195605
			165276	+48.171	11.84	+0.052	-0.00	+0.050	-0.30	+0.018	+0.04	+0.091161	+0.091456	+0.091666
			165273	+41.643	02.78	-0.002	+0.83	-0.000	+0.64	+0.017	+0.48	-0.391116	-0.390628	-0.390086
			165320	+51.654	00.80	-0.022	-0.55	-0.022	-0.57	-0.027	-0.54	+0.329278	+0.328829	+0.328369
442	443	444	165299	+06.147	14.57	+0.016	+0.60	+0.028	+0.64	+0.014	+0.61	+0.664976	+0.665018	+0.665015
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.282222	+0.282762	+0.283381
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	-0.206110	-0.206073	-0.206002
			165282	+29.006	07.60	+0.017	+0.32	+0.029	+0.32	+0.023	+0.24	-0.039137	-0.039339	-0.039557
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	+0.298049	+0.297632	+0.297163
445	446	447	165257	+24.270	54.59	-0.045	-0.50	-0.053	-0.56	-0.062	-0.53	+0.368978	+0.369217	+0.369472
			165265	+13.017	21.14	+0.015	-0.09	+0.022	+0.09	+0.024	+0.01	-0.033032	-0.032592	-0.032144
			165281	+27.431	59.28	+0.029	+0.64	+0.029	+0.48	+0.037	+0.55	-0.099781	-0.099536	-0.099215
			165317	+48.650	27.55	-0.044	-0.62	-0.050	-0.60	-0.059	-0.60	+0.159176	+0.158737	+0.158265
			165299	+06.147	14.57	+0.044	+0.57	+0.051	+0.58	+0.060	+0.57	+0.604660	+0.604174	+0.603627
448	449	450	165247	+22.373	44.17	-0.046	+0.92	-0.043	+0.78	-0.026	+0.78	-0.004654	-0.004116	-0.003575
			165257	+24.270	54.59	+0.034	-0.89	+0.036	-0.75	+0.011	-0.68	+0.329057	+0.329394	+0.329663
			165299	+06.147	14.57	+0.014	+0.18	+0.003	+0.14	+0.025	+0.00	+0.615967	+0.615629	+0.615345
			165304	+22.857	14.56	-0.050	+0.39	-0.034	+0.33	-0.052	+0.53	+0.227343	+0.226957	+0.226471
			165282	+29.006	07.60	+0.049	-0.60	+0.038	-0.51	+0.043	-0.63	-0.167713	-0.167854	-0.167904

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
451	452	453	165257	+24.270	54.59	+0.008	-0.02	+0.009	+0.04	+0.003	-0.03	+0.620152	+0.620778	+0.621407
			165255	+12.374	44.64	+0.015	-0.16	+0.019	-0.19	+0.026	-0.20	+0.095890	+0.096256	+0.096616
			165285	+36.164	47.10	-0.033	+0.29	-0.041	+0.26	-0.045	+0.35	-0.149754	-0.149962	-0.150175
			165310	+08.313	33.25	+0.042	-0.30	+0.051	-0.21	+0.048	-0.28	+0.033367	+0.032774	+0.032234
			165302	+19.080	19.46	-0.031	+0.20	-0.038	+0.10	-0.032	+0.26	+0.400345	+0.400153	+0.399918
454	455	456	165231	+16.959	03.65	-0.004	-0.16	-0.001	-0.28	-0.010	-0.13	-0.149989	-0.149377	-0.148721
			165266	+19.363	04.37	+0.010	+0.23	+0.010	+0.29	+0.020	+0.15	+0.351439	+0.351004	+0.350515
			165257	+24.270	54.59	-0.012	-0.33	-0.009	-0.48	-0.024	-0.24	+0.462033	+0.461550	+0.461017
			165235	+06.680	37.39	-0.018	-0.02	-0.031	+0.29	-0.026	+0.10	+0.160346	+0.160483	+0.160643
			165232	+44.370	07.76	+0.024	+0.29	+0.032	+0.17	+0.041	+0.12	+0.176171	+0.176340	+0.176545
457	458	459	165228	+42.174	59.89	-0.003	-0.19	-0.001	-0.19	-0.000	-0.30	-0.237160	-0.237178	-0.237154
			165233	+46.789	30.67	+0.005	+0.37	+0.001	+0.37	+0.000	+0.60	+0.120109	+0.120297	+0.120482
			165235	+06.680	37.39	+0.002	-0.11	+0.001	-0.07	-0.000	-0.17	+0.471213	+0.471758	+0.472381
			165257	+24.270	54.59	-0.006	-0.10	-0.002	-0.16	-0.000	-0.16	+0.431660	+0.431674	+0.431664
			165283	+30.279	21.48	+0.002	+0.02	+0.001	+0.05	-0.000	+0.03	+0.214178	+0.213449	+0.212628
460	461	462	165255	+12.374	44.63	+0.013	-0.45	+0.023	-0.35	+0.010	-0.40	-0.004336	-0.004641	-0.004926
			165228	+42.174	59.89	-0.012	+0.49	-0.020	+0.39	-0.007	+0.44	-0.185943	-0.185824	-0.185677
			165208	+31.387	42.28	+0.005	-0.34	+0.001	-0.31	-0.005	-0.33	+0.186645	+0.187071	+0.187484
			165235	+06.680	37.39	+0.006	+0.12	+0.028	+0.20	+0.023	+0.17	+0.468124	+0.468156	+0.468181
			165257	+24.270	54.59	-0.011	+0.18	-0.032	+0.07	-0.021	+0.12	+0.535509	+0.535237	+0.534968
463	464	465	165228	+42.174	59.89	-0.021	+0.44	-0.008	+0.46	-0.018	+0.42	-0.126314	-0.126614	-0.126401
			165218	+55.326	31.17	+0.000	-0.63	-0.011	-0.67	+0.007	-0.57	+0.344036	+0.344488	+0.344932
			165235	+06.680	37.39	+0.032	+0.55	+0.033	+0.59	+0.014	+0.46	+0.496341	+0.496439	+0.496543
			165257	+24.270	54.59	-0.035	-0.09	-0.028	-0.10	-0.021	-0.04	+0.430173	+0.429854	+0.429515
			165255	+12.374	44.63	+0.024	-0.27	+0.014	-0.28	+0.018	-0.27	-0.143736	-0.144164	-0.144589
466	467	468	165398	+19.056	07.23	+0.023	+0.27	+0.026	+0.21	+0.026	-0.13	-0.275434	-0.274259	-0.273186
			165425	+57.713	21.16	-0.007	-0.39	-0.011	-0.35	-0.006	+0.22	-0.088080	-0.088586	-0.088936
			165423	+56.104	43.91	-0.029	+0.19	-0.029	+0.23	-0.037	-0.16	+0.248843	+0.248994	+0.248809
			165390	+31.541	11.32	-0.032	-0.28	-0.036	-0.20	-0.037	+0.12	+0.487503	+0.488359	+0.489300
			165414	+51.608	24.28	+0.046	+0.21	+0.049	+0.11	+0.054	-0.05	+0.626165	+0.625401	+0.624813
469	470	471	165354	+10.844	57.00	+0.017	-0.29	+0.015	-0.28	+0.018	-0.16	+0.041488	+0.041775	+0.042092
			165366	+29.066	24.65	-0.008	-0.11	-0.009	-0.08	-0.012	+0.14	+0.417913	+0.417559	+0.417210
			165338	+58.121	56.80	+0.032	-0.42	+0.031	-0.43	+0.037	-0.35	+0.044826	+0.045033	+0.045252
			165328	+51.216	23.99	-0.033	+0.55	-0.030	+0.54	-0.036	+0.33	-0.208539	-0.207903	-0.207307
			165390	+31.541	11.32	-0.008	+0.27	-0.006	+0.25	-0.007	+0.05	+0.704311	+0.703536	+0.702753
472	473	474	165374	+58.269	57.66	+0.011	+0.68	+0.007	+0.46	+0.027	+0.47	+0.656471	+0.655470	+0.654636
			165354	+10.844	57.00	-0.019	-0.07	-0.010	+0.02	-0.027	+0.04	-0.256892	-0.255968	-0.255173
			165338	+58.121	56.80	-0.006	+0.70	-0.002	+0.53	+0.004	+0.57	-0.128039	-0.127336	-0.126562
			165347	+43.133	03.29	+0.026	-0.77	+0.012	-0.65	+0.021	-0.71	-0.121359	-0.120806	-0.120076
			165366	+29.066	24.65	-0.011	-0.55	-0.007	-0.36	-0.025	-0.37	+0.849819	+0.848641	+0.847174
475	476	477	165330	+55.440	24.81	+0.016	-0.35	+0.017	-0.54	+0.015	-0.36	-0.377697	-0.376790	-0.375766
			165347	+43.133	03.29	-0.002	+0.16	+0.007	+0.04	-0.002	+0.22	+0.291086	+0.290963	+0.290825
			165374	+58.269	57.66	-0.001	-0.01	-0.005	+0.06	-0.001	-0.04	+0.665901	+0.665227	+0.664512
			165338	+58.121	56.80	+0.008	-0.19	+0.007	-0.26	+0.008	-0.20	+0.575096	+0.574385	+0.573693
			165328	+51.216	23.99	-0.021	+0.40	-0.026	+0.69	-0.020	+0.38	-0.154385	-0.153784	-0.153264
478	479	480	165328	+51.216	23.99	-0.019	+0.14	-0.012	+0.13	-0.008	-0.05	+0.802553	+0.801925	+0.801243
			165354	+10.843	57.00	+0.014	+0.04	+0.008	+0.04	+0.006	+0.14	+0.649106	+0.648155	+0.647400
			165332	+14.191	59.49	+0.002	-0.31	+0.002	-0.28	+0.001	-0.20	+0.103869	+0.103877	+0.103921
			165320	+51.654	00.80	-0.014	+0.22	-0.009	+0.20	-0.006	+0.04	-0.505917	-0.505030	-0.504251
			165299	+06.147	14.57	+0.017	-0.09	+0.010	-0.08	+0.007	+0.07	-0.049616	-0.048927	-0.048312

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS				DEPENDENCES		
				S	**	S	**	S	**	S	**			
481	482	483	165317	+48.650	27.55	-0.014	+0.02	-0.010	-0.04	-0.018	-0.01	-0.007378	-0.006771	-0.006169
			165299	+06.147	14.57	+0.008	-0.02	+0.005	+0.02	+0.010	-0.00	+0.202241	+0.203558	+0.204839
			165330	+55.440	24.81	+0.041	+0.35	+0.043	+0.08	+0.031	+0.23	+0.279060	+0.278431	+0.277835
			165328	+51.216	23.99	-0.043	-0.19	-0.038	-0.10	-0.041	-0.15	+0.342783	+0.342113	+0.341437
			165332	+14.191	59.49	+0.008	-0.16	+0.001	+0.04	+0.018	-0.08	+0.183295	+0.182670	+0.182057
484	485	486	165299	+06.147	14.57	-0.003	-0.07	-0.006	-0.11	-0.004	-0.13	+0.268060	+0.269817	+0.271685
			165304	+22.857	14.56	-0.006	+0.35	+0.004	+0.36	-0.001	+0.43	-0.061907	-0.061710	-0.061503
			165330	+55.440	24.81	+0.020	-0.10	+0.023	+0.05	+0.019	+0.06	+0.480572	+0.480059	+0.479513
			165328	+51.216	23.99	-0.026	+0.21	-0.025	+0.04	-0.022	+0.04	+0.349472	+0.348578	+0.347592
			165310	+08.313	33.25	+0.014	-0.39	+0.005	-0.34	+0.008	-0.41	-0.036197	-0.036745	-0.037287
487	488	489	165257	+24.270	54.59	+0.008	-0.02	+0.009	+0.04	+0.007	-0.03	+0.300447	+0.301087	+0.301734
			165255	+12.374	44.64	+0.015	-0.16	+0.019	-0.19	+0.026	-0.20	-0.223374	-0.222874	-0.222358
			165285	+36.164	47.10	-0.033	+0.29	-0.041	+0.26	-0.045	+0.35	-0.120561	-0.120719	-0.120882
			165310	+08.313	33.25	+0.042	-0.30	+0.051	-0.21	+0.048	-0.38	+0.406238	+0.405587	+0.404933
			165302	+19.080	19.46	-0.031	+0.20	-0.038	+0.10	-0.032	+0.26	+0.637249	+0.636922	+0.636573
490	491	492	165228	+42.174	59.89	-0.003	-0.19	-0.001	-0.19	-0.000	-0.30	-0.382831	-0.382604	-0.382339
			165233	+46.789	30.67	+0.005	+0.37	+0.001	+0.37	+0.000	+0.60	-0.031223	-0.030983	-0.030735
			165235	+06.680	37.39	+0.002	-0.11	+0.001	-0.07	-0.000	-0.17	+0.210944	+0.211386	+0.211862
			165257	+24.270	54.59	-0.006	-0.10	-0.002	-0.16	-0.000	-0.16	+0.513008	+0.512898	+0.512761
			165287	+30.279	21.48	+0.002	+0.02	+0.001	+0.05	-0.000	+0.03	+0.690102	+0.689304	+0.688450
493	494	495	165333	+58.121	56.80	+0.021	-0.67	+0.025	-0.52	+0.024	-0.46	+0.205016	+0.204631	+0.204267
			165328	+51.216	23.99	+0.027	+0.01	+0.039	-0.04	+0.015	-0.06	+0.284384	+0.284489	+0.284644
			165302	+19.080	19.46	-0.026	+0.32	-0.034	+0.28	-0.021	+0.26	+0.508617	+0.509267	+0.509862
			165354	+10.844	57.00	+0.007	-0.25	+0.008	-0.20	+0.009	-0.17	+0.035690	+0.035969	+0.036235
			165366	+29.066	24.65	-0.029	+0.59	-0.037	+0.49	-0.027	+0.43	-0.033727	-0.034356	-0.035008
496	497	498	165338	+58.121	56.80	+0.002	-0.23	+0.001	-0.16	+0.000	-0.25	-0.022285	-0.021336	-0.022385
			165328	+51.216	23.99	-0.010	+0.59	-0.007	+0.40	-0.005	+0.67	+0.144669	+0.144479	+0.144280
			165330	+55.440	24.81	+0.009	-0.24	+0.007	-0.14	+0.007	-0.29	+0.196694	+0.196871	+0.196990
			165302	+19.080	19.46	-0.018	-0.35	-0.018	-0.35	-0.017	-0.30	+0.740126	+0.740697	+0.741262
			165299	+06.147	14.57	+0.018	+0.23	+0.017	+0.25	+0.016	+0.16	+0.338836	+0.339328	+0.339859
499	500	501	165300	+09.759	32.13	-0.011	-0.24	-0.012	-0.16	-0.010	-0.17	+0.712286	+0.713089	+0.713851
			165354	+10.844	57.00	-0.027	+0.01	-0.022	+0.05	-0.024	+0.07	-0.081291	-0.081397	-0.081464
			165332	+14.191	59.49	+0.026	+0.48	+0.028	+0.33	+0.024	+0.23	+0.218672	+0.219092	+0.219530
			165338	+58.121	56.80	-0.002	+0.50	+0.006	+0.39	-0.001	+0.41	+0.142042	+0.141330	+0.140655
			165347	+43.133	03.29	+0.014	-0.75	+0.001	-0.60	+0.011	-0.64	+0.008293	+0.007886	+0.007427
502	503	504	165338	+58.121	56.80	+0.008	-0.04	-0.001	+0.03	-0.012	+0.12	+0.047464	+0.047037	+0.046618
			165320	+51.654	00.80	+0.007	-0.01	+0.001	+0.04	-0.006	+0.08	+0.251640	+0.252062	+0.252490
			165330	+55.440	24.81	-0.010	-0.07	-0.009	-0.10	-0.012	+0.01	+0.142242	+0.142214	+0.142207
			165347	+43.133	03.29	-0.003	+0.08	+0.005	+0.02	+0.020	-0.13	-0.205008	-0.205506	-0.206041
			165299	+06.147	14.57	-0.002	+0.04	+0.003	+0.01	+0.010	-0.07	+0.763662	+0.764193	+0.764727
505	506	507	165328	+51.216	23.99	-0.008	-0.11	-0.005	-0.20	+0.007	-0.23	-0.048512	-0.049391	-0.050168
			165299	+06.147	14.57	-0.002	+0.32	-0.007	+0.45	-0.021	+0.40	+0.301099	+0.300942	+0.300824
			165332	+14.191	59.49	+0.031	-0.41	+0.034	-0.42	+0.028	-0.21	-0.036646	-0.036865	-0.037031
			165320	+51.654	00.80	-0.030	+0.51	-0.035	+0.56	-0.034	+0.34	+0.151480	+0.151803	+0.152083
			165276	+48.171	11.84	+0.009	-0.31	+0.013	-0.39	+0.020	-0.30	+0.632579	+0.633510	+0.634293
508	509	510	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	-0.047922	-0.047149	-0.046374
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.358261	+0.358098	+0.358025
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	+0.502001	+0.501346	+0.500717
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.176199	+0.176028	+0.175955
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.011461	+0.011617	+0.011678

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS				DEPENDENCES		
				S	**	S	**	S	**			
511	512	513	165257	+24.270	54.59	-0.045	-0.50	-0.053	-0.56	-0.062	-0.53	+0.475245	+0.475501	+0.475797
			165265	+13.017	21.14	+0.015	-0.09	+0.022	+0.09	+0.024	+0.01	+0.429466	+0.429986	+0.430507
			165281	+27.431	59.28	+0.029	+0.64	+0.029	+0.48	+0.037	+0.55	+0.284438	+0.284833	+0.285176
			165317	+48.650	27.55	-0.044	-0.62	-0.050	-0.60	-0.059	-0.63	-0.169164	-0.169640	-0.170135
			165299	+06.147	14.57	+0.044	+0.57	+0.051	+0.58	+0.060	+0.57	-0.019986	-0.020681	-0.021344
514	515	516	165235	+06.680	37.39	-0.024	-0.17	-0.034	+0.15	-0.036	-0.01	+0.245393	+0.244884	+0.244432
			165232	+44.370	07.76	+0.033	+0.12	+0.042	+0.01	+0.043	-0.01	+0.061065	+0.060843	+0.060569
			165212	+54.891	52.39	+0.030	-0.06	+0.030	+0.32	+0.030	-0.04	+0.275200	+0.275500	+0.275926
			165205	+13.797	52.63	-0.025	+0.02	-0.026	-0.21	-0.026	+0.03	-0.156947	-0.156187	-0.155452
			165231	+16.959	03.65	-0.014	+0.10	-0.011	-0.28	-0.010	+0.03	+0.575209	+0.574959	+0.574525
517	518	519	165260	+43.997	27.61	-0.007	+0.34	-0.010	+0.37	-0.009	+0.28	+0.099584	+0.099317	+0.098778
			165285	+36.164	47.10	+0.002	-0.47	+0.004	-0.45	-0.002	-0.21	+0.311779	+0.311880	+0.311976
			165322	+07.788	56.18	+0.005	-0.07	+0.006	-0.09	+0.007	-0.08	-0.729135	-0.730469	-0.731821
			165304	+22.857	14.56	-0.016	+0.47	-0.020	+0.55	-0.022	+0.44	+0.571003	+0.571673	+0.572779
			165282	+29.006	07.60	+0.017	-0.28	+0.021	-0.37	+0.025	-0.32	+0.746468	+0.747400	+0.748288
520	521	522	165322	+07.788	56.18	+0.001	+0.02	-0.004	-0.10	-0.002	-0.05	-0.391275	-0.392143	-0.393081
			165285	+36.164	47.10	-0.029	+0.44	-0.034	+0.52	-0.035	+0.39	+0.064525	+0.063978	+0.063377
			165283	+30.279	21.48	-0.026	+0.45	-0.039	+0.34	-0.037	+0.29	+0.648056	+0.649114	+0.650221
			165310	+08.313	33.25	+0.026	-0.45	+0.040	-0.30	+0.037	-0.27	+0.159866	+0.160191	+0.160624
			165255	+12.374	44.64	+0.029	-0.46	+0.038	-0.48	+0.037	-0.37	+0.518798	+0.518859	+0.518859
523	524	525	165231	+16.958	03.65	+0.010	-0.25	+0.011	-0.05	+0.012	-0.12	+0.041944	+0.043201	+0.044489
			165265	+13.017	21.14	-0.022	+0.32	-0.021	+0.03	-0.021	+0.20	+0.146004	+0.146278	+0.146440
			165276	+48.171	11.84	+0.012	-0.51	+0.015	-0.15	+0.017	-0.20	+0.275025	+0.274279	+0.273518
			165235	+06.680	37.39	+0.016	+0.75	+0.005	+0.37	-0.002	+0.13	+0.254697	+0.254329	+0.253972
			165218	+55.326	31.17	-0.016	-0.31	-0.009	-0.20	-0.006	-0.01	+0.382370	+0.381954	+0.381582
526	527	528	165221	+15.508	45.15	-0.031	+0.31	-0.003	+0.14	+0.023	+0.25	+0.576148	+0.577250	+0.578312
			165212	+54.891	52.39	+0.063	-0.49	+0.027	-0.00	-0.007	-0.27	+0.269604	+0.269878	+0.270203
			165205	+13.797	52.63	-0.025	+0.27	-0.000	+0.14	+0.023	+0.21	-0.119682	-0.120364	-0.121098
			165231	+16.959	03.65	-0.019	-0.08	-0.040	-0.41	-0.058	-0.11	+0.183300	+0.183273	+0.183146
			165266	+19.363	04.37	+0.011	-0.01	+0.015	+0.14	+0.019	+0.01	+0.090628	+0.090004	+0.089439
529	530	531	165390	+31.541	11.32	-0.010	+0.81	-0.022	+0.77	-0.024	+0.92	+0.550533	+0.551513	+0.550513
			165374	+58.269	57.66	-0.056	-0.12	-0.048	-0.15	-0.052	-0.09	+0.066964	+0.067039	+0.067130
			165398	+19.056	07.23	+0.039	-0.75	+0.047	-0.70	+0.050	-0.88	-0.124158	-0.124707	-0.125354
			165338	+58.121	56.80	+0.021	-0.52	+0.027	-0.49	+0.029	-0.61	+0.742868	+0.743347	+0.743794
			165354	+10.844	57.00	+0.007	+0.60	-0.004	+0.57	-0.004	+0.67	-0.238227	-0.237192	-0.236084
532	533	534	165338	+58.121	56.80	+0.021	-0.67	+0.025	-0.53	+0.024	-0.46	+0.517913	+0.517829	+0.517734
			165328	+51.216	23.99	+0.027	+0.01	+0.039	-0.04	+0.015	-0.06	+0.241695	+0.241898	+0.242121
			165302	+19.080	19.46	-0.026	+0.32	-0.034	+0.28	-0.021	+0.26	+0.202730	+0.203581	+0.204424
			165354	+10.844	57.00	+0.007	-0.25	+0.008	-0.20	+0.009	-0.17	-0.303092	-0.303342	-0.303594
			165366	+29.066	24.65	-0.029	+0.59	-0.037	+0.49	-0.027	+0.43	+0.340755	+0.340034	+0.339315
535	536	537	165300	+09.759	32.13	-0.011	-0.24	-0.012	-0.16	-0.010	-0.17	+0.418523	+0.419697	+0.420873
			165354	+10.844	57.00	-0.027	+0.01	-0.022	+0.05	-0.024	+0.07	-0.221537	-0.221989	-0.222456
			165332	+14.191	59.49	+0.026	+0.48	+0.028	+0.33	+0.024	+0.33	-0.138452	-0.138243	-0.137997
			165338	+58.121	56.80	-0.002	+0.50	+0.006	+0.39	-0.001	+0.41	+0.697741	+0.697273	+0.696848
			165347	+43.133	03.29	+0.014	-0.75	+0.001	-0.60	+0.011	-0.64	+0.243726	+0.243262	+0.242732
538	539	540	165276	+48.171	11.84	+0.010	-0.39	+0.018	-0.09	+0.020	-0.09	+0.004595	+0.004392	+0.003906
			165235	+06.680	37.39	-0.007	+0.87	-0.019	+0.38	-0.023	+0.22	-0.070978	-0.070860	-0.070673
			165218	+55.326	31.17	-0.011	-0.69	-0.009	-0.50	-0.005	-0.18	+0.023450	+0.024046	+0.024675
			165283	+30.279	21.48	-0.013	-0.00	-0.017	-0.15	-0.017	-0.01	+0.654340	+0.653703	+0.653128
			165233	+46.789	30.67	+0.021	+0.21	+0.026	+0.35	+0.025	+0.06	+0.388592	+0.388619	+0.388964

TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	**	S	**	S	**	S	**			
541	542	543	165299	+06.147	14.57	+0.016	+0.60	+0.020	+0.64	+0.014	+0.61	+0.239562	+0.238349	+0.238152
			165247	+22.373	44.17	-0.012	-0.46	-0.020	-0.49	-0.009	-0.48	+0.503488	+0.503173	+0.503868
			165255	+12.374	44.64	+0.001	+0.23	+0.002	+0.27	-0.004	+0.30	+0.207880	+0.208148	+0.208444
			165282	+29.006	07.60	+0.017	+0.33	+0.029	+0.32	+0.022	+0.24	+0.072441	+0.072273	+0.072104
			165310	+08.313	33.25	-0.023	-0.70	-0.039	-0.73	-0.023	-0.68	-0.021372	-0.021943	-0.022588
544	545	546	165243	+53.351	19.06	-0.026	+0.29	-0.023	+0.24	-0.028	+0.47	+0.381561	+0.381292	+0.381012
			165220	+03.162	13.35	+0.034	-0.47	+0.032	-0.41	+0.039	-0.72	+0.374161	+0.374639	+0.375143
			165228	+42.174	59.89	-0.015	+0.53	-0.016	+0.50	-0.019	+0.67	+0.170422	+0.171046	+0.171640
			165255	+12.374	44.64	-0.020	-0.47	-0.012	-0.50	-0.016	-0.41	+0.055505	+0.055455	+0.055307
			165282	+29.006	07.60	+0.025	+0.13	+0.019	+0.17	+0.024	-0.01	+0.018251	+0.017569	+0.016898

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Preliminary report

OBSERVATIONS À LA LUNETTE ZENITHALE (DE 110 mm) DU SERVICE DE LATITUDE DE L'OBSERVATOIRE DE BELGRADE EN 1986, 1987, 1988

R. Grujić, M. Djokić et N. Djokić

Astronomical Observatory, Volgina 7, 11050, Belgrade, Yugoslavia

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RÉSUMÉ: On présente les valeurs de latitude ansi que quelques données météorologiques prises au cours d'observations.

Les valeurs de latitude géographique sont dérivés des observations en utilisant la manière décrite par Ševarlić et Teleki (1960) snas appliquer des erreurs progressives et périodiques et aussi sans le coefficient de température (Milovanović et al., 1970). Elles sont données dans le Tableau I.

La valuer d'un tour de vis micrométrique (R) appliquée ici est égal R = 40.0660 (Grujić et al., 1985).

La manière de la publication des valuers de latitude géographique obtenues des observations avec le zénith–télescope de l'Observatoire Astronomique de Belgrade à partir de ce numéro du Bulletin et à l'avenir sera différente de celle utilisée jusqu'à présent par quelques détails comme les suivants:

1) A part des valeurs de latitude géographique obtenues des observations selon le programme nouveau (Ševarlić, Teleki, 1960) et données dans le Tableau (Tableau I), dans les colonnes φ_a, φ_b, nous presentons aussi les valeurs de latitude géographique obtenues des observations selon up programme additionnel dans les colonnes φ_{-1}, φ_{-2}.

2) Les positions apparentes des couples d'étoiles pour tous les deux programmes d'observations sont données dans le „Merit" systéme de declinaison.

3) Les corrections de declinaisons sont différentes de celles appliquées jusqu'à présent. Elles sont dérivées des relations des groupes des deux programmes donnés dans le système „Merit". Elles ont été pobliées par Grujić et Teleki (1987, Tableau 5, colonne „complete")

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Tableau I. Les valeurs de latitude ansi que quelques données météorologiques au cours d'observations

DATE		Jul.days	OBS.	Tz	Ti	Tv	Bo	GR.	a	b	l	2
1986		2446000+										
I	8	439.200	ND	- 0.6C	- 0.6C	- 0.8C	738.4	I	10.645			
	8	439.251	ND	- 1.3	- 1.2	- 1.4	738.7	I		10.645		
	13	444.186	MD	2.4	0.6	1.7	738.9	I	10.449			
	13	444.237	MD	2.0	0.4	1.4	738.9	I		10.600		
	14	445.281	RG	5.3	2.8	4.9	731.4	I				10.454
	14	445.349	RG	5.7	3.0	4.8	729.3	II	10.259			
	17	448.226	ND	- 1.2	- 1.7	- 1.8	736.5	I		10.549		
	21	452.262	RG	4.2	2.0	3.1	745.7	I				10.300
	21	452.330	RG	4.2	2.0	2.9	744.6	II	10.523			
	29	460.240	ND	1.2	1.6	1.6	739.5	I				10.447
	29	460.308	ND	0.6	0.6	0.8	739.2	II	10.523			
III	6	496.258	RG	4.6	2.0	3.1	738.8	II		10.364		
	6	496.319	RG	3.7	2.0	2.8	739.2	III			10.437	
	16	506.231	RG	- 0.1	0.7	0.4	748.4	II		10.284		
	16	506.292	RG	- 0.8	0.0	- 0.4	748.8	III			10.403	
	17	507.229	RG	2.6	1.7	1.2	747.8	II		10.367		
	24	514.270	RG	9.4	7.2	8.4	732.8	III			10.445	
	25	515.326	RG	6.6	9.4	8.4	731.0	III	10.416			
	31	521.310	RG	13.2	11.2	11.4	736.2	III	10.034			
	31	521.360	MD	13.0	11.0	11.2	736.3	III		10.144		
	31	521.403	MD	12.9	10.7	11.2	736.4	III				10.032
IV	8	529.381	RG	18.2	17.2	17.0	736.3	III				10.256
	15	536.319	RG	7.5	6.6	6.3	737.5	III		10.070		
	21	542.303	MD	13.1	10.5	10.2	739.6	III		10.276		
	21	542.345	MD	12.6	10.1	10.1	740.4	III				9.999
	22	543.300	RG	16.5	13.9	13.8	739.5	III		10.189		
	22	543.342	RG	16.4	13.4	13.3	740.0	III				10.246
	23	544.297	ND	19.0	15.4	15.0	740.8	III		10.376		
	23	544.340	ND	18.7	14.8	14.7	741.3	III				10.213
	24	545.294	RG	20.0	18.2	17.4	741.0	III		10.190		
V	13	564.317	RG	15.8	15.2	14.2	741.1	IV			10.117	
	13	564.360	RG	15.8	14.8	14.0	741.1	IV	10.126			
	13	564.409	RG	16.2	14.3	13.7	740.8	IV		10.146		
	14	565.282	ND	20.4	17.9	17.6	739.2	III				10.117
	14	565.315	ND	18.4	16.5	16.4	739.7	IV			10.364	
	14	565.358	ND	16.4	16.3	16.1	739.6	IV	10.086			
	21	572.296	ND	22.0	20.4	19.8	739.7	IV			10.058	
	21	572.388	ND	21.0	19.2	18.6	739.5	IV		10.164		
	28	579.368	ND	22.2	20.0	19.5	738.0	IV		10.242		

VI	14	596.368	RG	20.6	19.7	19.4	741.8	IV				10.176
	14	596.441	RG	21.0	19.1	18.8	742.0	V	10.079			
VII	11	623.369	MD	16.4	17.6	16.9	740.1	V	10.064			
	23	635.334	ND	21.0	19.4	18.8	737.7	V	10.139			
	23	635.381	ND	21.2	18.9	18.7	737.5	V		10.212		
	26	638.326	RG	19.6	18.9	17.8	740.4	V	10.162			
	26	638.373	RG	20.0	18.0	16.9	740.8	V		10.216		
	28	640.321	MD	18.7	20.0	19.0	743.1	V	10.125			
	28	640.368	MD	16.7	18.8	17.4	743.3	V		10.325		
	29	641.318	RG	19.8	19.3	18.4	740.3	V	10.209			
	29	641.365	RG	18.7	18.6	17.8	740.4	V		10.284		
	30	642.315	ND	22.8	20.6	19.8	739.3	V	10.307			
	30	642.362	ND	20.6	19.6	18.9	739.8	V		10.148		
VIII	7	650.293	ND	22.3	22.0	21.2	738.6	V	10.201			
	7	650.340	ND	20.6	21.3	20.6	738.8	V		10.330		
	8	651.290	MD	25.0	22.8	22.9	738.3	V	10.194			
	12	655.279	ND	27.4	24.8	24.7	736.6	V	10.191			
	12	655.326	ND	25.2	24.1	23.7	736.4	V		10.275		
	15	658.272	MD	21.8	22.0	21.5	740.9	V	10.209			
	15	658.319	MD	21.0	21.2	20.0	741.5	V		10.159		
	19	662.260	ND	29.6	25.7	25.2	733.7	V	10.075			
	19	662.308	ND	26.3	24.9	24.2	735.1	V		10.216		
	26	669.288	ND	18.0	17.8	16.8	737.4	V		10.237		
	30	673.277	ND	13.0	16.2	14.7	743.0	V		10.080		
	30	673.340	ND	12.0	14.6	13.4	743.4	VI			10.253	
IX	6	680.376	RG	17.6	15.3	14.7	741.8	VI	10.298			
	12	686.242	ND	23.5	20.8	21.0	739.1	V		10.533		
	12	686.305	ND	22.6	20.2	19.8	739.5	VI			10.295	
	15	689.233	MD	25.6	23.3	23.6	739.0	V		10.420		
	15	689.297	MD	24.2	22.7	22.6	739.6	VI			10.319	
	16	690.348	RG	25.8	22.4	22.0	739.3	VI	10.411			
	17	691.228	ND	26.5	23.7	23.8	738.4	V		10.352		
	17	691.292	ND	25.7	22.8	22.4	739.0	VI			10.129	
	23	697.329	RG	17.0	16.2	15.6	743.3	VI	10.365			
	24	698.272	ND	20.7	17.6	17.0	738.9	VI			10.305	
	24	698.326	ND	21.0	17.0	16.8	738.7	VI	10.251			
X	2	706.304	RG	16.8	14.1	13.7	744.9	VI	10.334			
	5	709.346	RG	9.1	10.8	9.6	748.4	VI		10.464		
	11	715.329	RG	14.3	13.7	13.3	745.2	VI		10.524		
	14	718.321	RG	8.6	9.8	8.8	749.1	VI		10.439		
XI	7	742.206	ND	6.2	5.9	5.8	744.2	VI	10.405			
	7	742.255	ND	5.2	5.1	4.7	744.2	VI		10.537		
	7	742.296	ND	4.2	4.6	4.3	744.3	VI				10.563

XI	8	743.253	RG	5.5	5.0	4.8	741.6	VI		10.453		
	12	747.192	ND	12.0	8.0	8.6	748.7	VI	10.434			
	12	747.242	ND	10.4	7.6	8.0	749.0	VI		10.430		
	12	747.283	ND	10.4	7.4	7.5	749.0	VI				10.477
	12	747.319	ND	8.9	7.1	7.2	749.2	I			10.569	
	16	751.181	ND	13.0	9.5	10.1	747.7	VI	10.530			
	16	751.231	ND	12.2	9.0	9.1	747.2	VI		10.445		
	17	752.178	MD	8.4	9.0	9.0	746.8	VI	10.369			
	26	761.244	ND	5.2	4.8	4.8	746.8	VI				10.369
XII	3	768.184	ND	1.8	1.8	2.0	754.8	VI		10.459		
	3	768.225	ND	1.2	1.2	1.2	754.8	VI				10.601
	10	775.206	ND	- 3.3	- 1.0	- 1.6	751.8	VI				10.604
1987												
I	16	812.229	MD	- 2.0	- 2.6	- 2.3	744.4	I		10.154		
	25	821.252	RG	- 2.8	- 3.0	- 3.0	745.2	I				10.338
	25	821.319	RG	- 2.0	- 3.0	- 2.8	741.8	II	10.491			
II	25	852.284	RG	- 2.5	- 1.2	- 2.0	744.7	II		10.553		
	26	853.232	RG	- 0.8	0.4	0.2	746.9	II	10.511			
III	24	879.271	RG	5.3	4.0	3.9	738.2	III			10.560	
	24	879.329	RG	5.0	3.2	2.8	738.6	III	10.414			
	25	880.268	ND	12.2	7.9	9.2	736.5	III			10.422	
IV	19	905.258	RG	12.9	12.5	11.8	742.5	III	10.352			
	19	905.309	RG	12.6	11.4	10.3	742.5	III		10.321.		
	19	905.351	RG	10.9	10.5	9.6	742.5	III				10.226
	23	909.298	RG	9.9	10.8	10.2	748.3	III		10415		
	23	909.340	RG	8.0	10.0	9.2	748.3	III				10.418
	24	910.295	MD	11.7	11.6	11.2	744.2	III		10.399		
	24	910.338	MD	10.8	10.4	9.5	744.2	III				10.194
	28	914.284	RG	8.6	9.6	8.6	750.3	III		10.284		
	28	914.326	RG	6.8	8.7	7.6	751.0	III				10.273
V	9	925.329	RG	9.6	10.8	10.4	740.4	IV			10.422	
	9	925.372	RG	9.6	10.3	9.6	740.4	IV	10.211			
	12	928.288	RG	17.8	16.8	16.4	734.9	III				10.285
	12	928.321	RG	16.4	15.2	14.6	734.8	IV			10.262	
	26	942.326	RG	14.4	14.4	13.8	739.6	IV	10.220			
VI	6	953.344	RG	17.6	17.1	16.3	741.8	IV		10.263		
	6	953.391	RG	17.6	16.2	15.4	742.2	IV				10.465
	26	973.336	MD	21.9	20.0	19.6	740.4	IV				10.472
	26	973.409	MD	20.7	19.4	19.1	739.6	V	10.369			
	30	977.325	RG	21.9	22.8	22.3	742.5	IV				10.467
VII	5	982.384	RG	16.9	19.9	18.5	741.4	V	10.348			

VII	11	988.368	RG	19.4	19.7	18.4	742.2	V	10.267		
	11	988.415	RG	19.1	18.7	17.4	741.9	V		10.389	
	14	991.360	RG	21.8	23.1	21.8	741.2	V	10.201		
	15	992.357	MD	21.2	23.2	22.1	739.8	V	10.366		
	19	996.346	RG	29.2	26.2	25.8	735.8	V	10.294		
	19	996.393	RG	28.4	25.7	25.0	735.7	V		10.251	
	21	998.340	RG	28.0	26.6	25.9	736.2	V	10.214		
	21	998.388	RG	26.2	26.0	25.3	737.9	V		10.445	
	22	999.338	MD	25.4	24.8	23.4	740.3	V	10.344		
		2447000+									
	28	005.322	RG	14.5	18.4	16.3	739.9	V	10.248		
	28	005.369	RG	14.6	17.4	15.6	740.5	V		10.293	
VIII	6	014.297	ND	15.7	17.2	15.5	739.8	V	10.257		
	6	014.344	ND	14.0	15.8	14.3	740.2	V		10.292	
	6	014.407	ND	14.1	15.1	13.8	740.7	VI			10.257
	17	025.267	ND	17.7	19.2	17.8	740.8	V	10.135		
	17	025.314	ND	15.8	17.7	16.3	740.8	V		10.329	
	17	025.377	ND	15.8	16.7	15.6	740.5	VI			10.284
	17	025.481	ND	16.4	15.6	15.1	740.2	VI		10.408	
	22	030.300	ND	17.4	18.4	17.3	740.6	V		10.339	
	22	030.363	ND	17.1	17.6	16.7	740.9	VI			10.206
	31	039.275	ND	21.8	21.0	20.3	740.8	V		10.238	
	31	039.338	ND	20.8	20.2	19.4	740.6	VI			10.202
IX	2	041.270	ND	21.4	21.1	20.2	738.9	V		10.394	
	2	041.333	ND	20.6	20.1	19.1	738.9	VI			10.347
	2	041.388	ND	20.1	19.5	18.6	739.4	VI	10.401		
	2	041.437	ND	19.6	19.0	18.4	739.4	VI		10.426	
	4	043.265	ND	21.7	22.3	21.4	737.9	V		10.307	
	4	043.328	ND	20.8	21.0	20.1	738.7	VI			10.165
	4	043.382	MD	20.3	20.3	19.4	738.7	VI	10.448		
	4	043.431	MD	19.7	20.0	19.0	738.9	VI		10.452	
	11	050.308	ND	19.3	20.0	19.0	741.2	VI			10.301
	11	050.362	ND	18.4	19.0	18.1	742.2	VI	10.301		
	11	050.412	MD	17.9	18.4	17.7	743.2	VI		10.350	
	13	052.303	RG	24.0	23.4	23.1	742.6	VI			10.325
	13	052.357	RG	22.0	22.6	22.1	742.9	VI	10.334		
	16	055.294	ND	19.4	22.0	20.2	745.8	VI			10.318
	16	055.349	MD	18.4	20.4	18.8	746.1	VI	10.337		
	16	055.398	MD	17.9	19.6	18.3	746.0	VI		10.464	
	17	056.292	RG	21.3	22.2	20.6	745.9	VI			10.251
	17	056.346	RG	19.4	21.0	19.7	746.2	VI	10.434		

IX	20	059.284	RG	23.0	23.6	23.0	738.7	VI			10.281	
X	4	073.299	RG	10.0	11.3	10.5	747.7	VI	10.370			
	11	080.281	RG	15.0	16.0	15.5	736.6	VI	10.359			
	15	084.269	RG	17.1	14.3	14.3	741.4	VI	10.374			
	20	089.256	RG	11.1	13.0	12.0	743.6	VI	10.373			
	28	097.234	ND	1.8	5.9	4.0	750.5	VI	10.213			
	28	097.283	ND	0.3	4.4	3.2	750.4	VI		10.198		
XI	1	101.223	RG	4.2	4.6	4.3	745.4	VI	10.336			
	8	108.204	ND	7.5	5.8	5.8	740.8	VI	10.136			
	8	108.253	ND	7.3	5.4	5.4	740.7	VI		10.266		
XII	22	152.248	RG	5.0	4.5	4.4	745.7	I	10.348			
	30	160.276	ND	7.8	6.9	6.9	743.6	I		10.392		
	31	161.185	RG	8.0	6.1	6.4	740.0	I			10.337	
	31	161.223	RG	7.9	5.9	6.1	739.6	I	10.296			
1988												
I	5	166.172	MD	10.6	7.5	8.4	741.1	I			10.337	
	5	166.260	ND	8.0	6.7	6.8	741.5	I		10.373		
	14	175.235	RG	- 0.6	0.0	- 0.6	748.2	I		10.341		
	16	177.179	ND	4.0	0.6	1.4	749.3	I	10.377			
	16	177.230	ND	2.6	0.4	0.8	749.3	I		10.280		
	20	181.219	MD	1.7	2.8	2.6	741.6	I		10.483		
II	6	198.288	RG	11.5	8.1	9.0	737.0	II	10.276			
	16	208.260	RG	1.8	2.4	1.2	748.5	II	10.413			
	16	208.309	RG	1.5	1.3	0.2	747.8	II		10.371		
	17	209.257	MD	3.7	2.8	2.1	738.1	II	10.404			
III	15	236.352	RG	8.0	5.2	5.7	738.0	III	10.271			
	24	245.327	RG	9.4	8.6	8.3	737.8	III	10.098			
	30	251.253	ND	10.2	8.4	9.1	736.9	III			10.486	
	30	251.311	ND	10.0	7.8	8.3	736.9	III	10.297			
IV	2	254.354	RG	8.5	8.4	7.6	743.2	III		10.218		
	2	254.396	RG	8.5	7.6	6.8	743.6	III				10.276
	12	264.275	RG	-	12.8	13.0	-	III	10.322			
	12	264.326	RG	-	12.2	12.2	738.4	III		10.367		
	20	272.304	ND	13.2	12.0	12.4	736.5	III		10.265		
V	2	284.272	ND	19.5	15.6	15.4	738.9	III		10.245		
	2	284.314	ND	14.5	14.6	14.2	739.6	III				10.237
	17	299.305	RG	17.5	18.2	17.4	734.2	IV			10.319	
	26	308.372	RG	18.0	17.4	16.4	736.2	IV		10.433		
	26	308.419	RG	16.5	16.6	15.9	735.8	IV				10.446
VI	4	317.394	RG	17.0	17.7	17.0	734.6	IV				10.361
	14	327.320	RG	17.4	18.8	17.4	-	IV		10.513		
	14	327.360	RG	16.6	18.1	16.6	737.2	IV				10.504

VI	18	331.356	RG	17.0	18.2	17.0	737.9	IV				10.419
VII	11	354.366	RG	17.9	20.0	17.9	741.4	V	10.357			
	11	354.413	RG	16.8	19.0	17.2	740.9	V		10.578		
	17	360.349	RG	18.0	18.6	17.5	739.7	V	10.403			
	17	360.397	RG	16.8	17.8	16.9	739.9	V		10.344		
	20	363.341	RG	18.2	19.3	18.1	741.4	V	10.416			
	24	367.377	RG	26.4	25.8	24.9	738.8	V		10.547		
	27	370.322	ND	27.0	26.8	25.8	737.0	V	10.603			
	27	370.369	ND	26.1	25.6	24.4	737.1	V		10.437		
	28	371.367	RG	20.9	23.0	21.5	740.6	V		10.642		
	29	372.364	MD	25.2	25.1	24.5	735.9	V		10.571		
VIII	1	375.308	ND	23.8	22.8	21.7	742.5	V	10.412			
	1	375.356	ND	20.0	21.2	19.7	742.5	V		10.738		
	2	376.353	RG	24.6	23.5	22.4	739.2	V		10.545		
	6	380.294	ND	19.8	20.9	19.4	741.2	V	10.545			
	8	382.289	ND	24.5	22.3	21.4	737.5	V	10.515			
	8	382.336	ND	21.0	21.4	20.4	737.9	V		10.768		
	9	383.286	MD	22.6	23.8	23.0	737.4	V	10.368			
	9	383.333	MD	22.8	22.6	21.5	737.7	V		10.600		
	12	386.278	ND	27.5	25.6	24.4	738.4	V	10.593			
	12	386.325	ND	25.2	24.8	23.8	739.0	V		10.481		
	12	386.388	MD	25.1	24.2	23.5	739.0	VI			10.446	
	18	392.309	MD	19.7	21.8	19.9	740.9	V		10.542		
	18	392.372	ND	19.1	20.9	19.2	740.9	VI			10.410	
	18	392.426	ND	18.5	20.0	18.5	740.7	VI		10.657		
	28	402.281	ND	17.8	18.5	17.6	739.2	V		10.595		
	28	402.344	ND	17.4	17.2	16.1	738.5	VI			10.367	
	31	405.274	ND	21.6	22.1	21.3	739.9	V		10.503		
	31	405.337	NI	20.6	21.0	20.0	743.0	VI			10.457	
	31	405.391	MD	20.3	20.3	19.6	740.3	VI	10.574			
IX	5	410.260	ND	21.0	21.6	20.5	742.9	V		10.448		
	5	410.323	ND	19.2	20.5	19.3	743.2	VI			10.468	
	5	410.377	MD	18.5	19.6	18.4	743.2	VI	10.457			
	5	410.426	MD	18.3	19.0	18.0	742.7	VI		10.522		
	27	432.366	RG	17.5	17.8	17.0	744.8	VI		10.658		
	27	432.407	RG	17.2	17.2	16.3	744.6	VI				10.489
	28	433.260	ND	19.0	18.6	18.2	742.2	VI			10.384	
	30	435.254	ND	18.5	17.9	17.4	741.9	VI			10.356	
	30	435.308	ND	16.4	17.1	16.4	743.2	VI	10.433			
X	5	440.241	ND	14.7	14.2	13.9	740.5	VI			10.410	
	5	440.295	ND	13.6	13.1	12.6	740.5	VI	10.496			
	5	440.344	ND	12.4	12.6	12.2	740.5	VI		10.409		

X	12	447.276	ND	15.8	15.4	15.4	740.1	VI	10.378			
	13	448.400	RG	-	14.8	14.5	744.1	I			10.384	
	13	448.438	RG	14.3	14.4	14.2	744.2	I	10.394			
	14	449.270	ND	14.8	15.3	15.2	745.4	VI	10.263			
	16	451.355	MD	9.2	11.6	9.8	748.3	VI				10.378
	18	453.386	RG	11.8	11.8	11.8	738.7	I			10.592	
	18	453.424	RG	11.7	11.8	11.7	738.3	I	10.226			
	31	466.224	ND	4.5	4.2	3.4	743.0	VI	10.284			
	31	466.273	ND	0.0	3.0	2.2	743.4	VI		10.233		
XI	2	468.218	ND	10.0	5.3	6.2	741.0	VI	10.290			
	2	468.267	ND	8.4	5.2	5.7	741.0	VI		10.189		
	2	468.308	MD	8.4	5.1	5.6	741.0	VI				10.091
	2	468.345	MD	7.9	5.2	5.7	740.6	I			10.199	
	9	475.249	ND	- 0.1	0.9	0.7	748.9	VI		10.279		
	9	475.290	MD	- 1.4	0.3	- 0.1	749.4	VI				10.246
	11	477.243	MD	- 3.0	- 0.3	- 1.0	752.5	VI		10.490		
	11	477.284	MD	- 3.2	- 1.3	- 2.4	752.7	VI				10.238
	18	484.265	MD	2.3	2.0	1.8	739.9	VI				10.137
	18	484.301	MD	2.4	1.5	1.1	739.1	I			10.376	
	25	491.245	MD	- 5.1	- 5.1	- 4.4	743.2	VI				10.531
XII	5	501.177	MD	4.8	4.9	5.3	733.6	VI		10.136		
	5	501.218	ND	4.9	4.6	4.7	733.6	VI				10.261
	7	503.212	ND	4.7	3.2	3.2	739.2	VI				10.221
	7	503.249	ND	2.6	2.6	2.3	740.0	I			10.304	
	7	503.287	MD	2.4	2.2	2.2	740.3	I	10.171			
	9	505.207	MD	- 1.2	1.0	0.2	744.8	VI				10.044
	21	517.249	MD	- 2.2	- 0.8	- 1.2	749.9	I	10.196			
	23	519.169	ND	7.9	2.1	3.2	741.7	VI				10.102
	23	519.206	ND	7.9	2.1	3.4	740.7	I			10.121	
	26	522.235	ND	7.7	2.8	4.0	748.4	I	10.053			
	26	522.285	ND	6.0	2.9	3.8	748.1	I		10.002		

LA LÉGENDE:

Date: Année, mois et date d'observation
Jul days: Jours Jul. en 0.001
Obs.: Observateurs, R. Grujić (RG), M. Djokić (MD), N. Djokić (ND)
Tz: Température à l'abri météorologique éloigné 50 m de l'instrument.
Ti: Température de l'instrument.
Tv: Température de l'air dans la salle d'observation (valeur moy. des lectures des thermomètres sud et nord).
Bo: Lecture du baromètre en mm Hg (tenant compte de la température de baromètre).
GR: Numéro de la groupe.
φ_a, φ_b: La latitude de la sous–groupe a, resp. b.
φ_{-1}, φ_{-2}: La latitude de la groupe de la programme supplémentaire.

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Preliminary report

ON THE GALACTOCENTRIC MOTION OF THE GLOBULAR CLUSTER NGC 6712

S. Ninković

Astronomical Observatory, Volgina 7, 11050 Belgrade, Yugoslavia

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SUMMARY: The elements of the galactocentric orbit are determined for the globular cluster NGC 6712. An elongated orbit (e = 0.77) with a small perigalactic distance ($R_p \approx 1$ kpc), not highly inclined to the galactic plane (i = 53°, 127°), is found. It is curious to note that a comparison with the case of NGC 362, another globular cluster similar to it with respect to the chemical composition, reveals a significant similarity in the orbital elements.

1. INTRODUCTION

Studies of galactic motions of globular clusters are doubtlessly important, especially taking into account differences in their chemical compositions. There is a series of papers by the present author (and his colleagues) devoted to the subject (Ninković, 1983; Brosche et al., 1983; Brosche et al., 1985; Ninković, 1987; Ninković, 1988).

A new case is NGC 6712 recently treated by Cudworth (1988). This cluster has the ratio [Fe/H] about −1 (Cudworth, 1988 and the references therein), a value not rarely cited in the literature as a limiting one separating the so–called „rich" (in heavy elements) globulars from the „poor" ones. It is expected that the galactocentric motion of the two types of globular clusters is also mutually different (e.g. Ninković, 1987).

2. TREATMENT

In his own paper Cudworth (1988) determined the proper motion and the heliocentric distance of NGC 6712, and consequently its space motion. In the present paper the same data (angular coordinates, proper motion, distance, line–of–sight velocity) as in Cudworth's one are used for the purpose of obtaining the galactocentric motion of the cluster. The „constants" (solar motion, galactocentric motion and distance of the Sun) are somewhat different from those assumed by Cudworth, but they are the same as in the earlier papers by the present author (Ninković, 1987, 1988). However, this is practically of no influence. It is important to emphasize that Cudworth's conclusion that the cluster does not belong to a disc population is mainly based on an inspection of the space velocity data.

However, the calculation of the velocity components in the galactocentric spherical reference frame reveals other details. The fraction of the square of the galactocentric radial velocity component in the galactocentric velocity square is at present 82%. This is an indication of a large orbital eccentricity and, with regard to the small actual galactocentric distance (3.86 kpc), also of a small perigalactic distance. Calculations based on a simple model of the Galaxy (Brosche et al., 1985) and on a more refined one (Ninković, 1988) yield a mean galactocentric distance of about 4.5 kpc and orbital eccentricity about 0.77, i.e. the perigalactic distance about 1 kpc and the apogalactic one about 8 kpc.

It is found that the angle between the present galactocentric position of the cluster and the direction of the descending node (the cluster is now below the galactic plane) is about 9° only. For this reason Cudworth's estimate of the time having elapsed between the last passage of the cluster through the galactic plane and the present moment is, though formally incorrect (it would be correct if the cluster's motion were rectilinear and uniform), not erroneous.

3. DISCUSSION AND CONCLUSIONS

It is interesting to compare these results to those obtained for NGC 362 (Brosche et al., 1989). There is some similarity in their chemical composition (e.g. data from Alcaino's catalogue: spectral type, ΔV, S, Q, $(B-V)_{0g}$, $(B-V)_0$, m/H–Alcaino, 1977). This effect is

enhanced after comparing the orbital elements. Thus the ratio of the modulus of the angular momentum component along the galactic axis of rotation to the total angular momentum modulus is very similar: expressed through the cosine it yields 53° in the case of NGC 6712 and 58° for NGC 362. The same is true for the eccentricity – 0.77 (NGC 6712), 0.8 (NGC 362)– and both apo– and perigalactic distances: 8 kpc (NGC 6712), 10 kpc (NGC 362), i.e. 1 kpc (NGC 6712), 1.3 kpc (NGC 362).

Perhaps, there is in the Galaxy an intermediate group of globular clusters (with regard to the chemical composition) possessing very eccentric orbits, with small perigalactic distances, remaining approximately interior to the galactocentric position of the Sun?

However, one should certainly bear in mind the significant errors in chemical composition indicators, as well as that the orbital elements depend on the proper motions having also large errors and finally that the potential of our Galaxy is not strictly speaking spherically symmetric in which case the projections of the angular momentum on the galactic plane are no long integrals of motion.

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Preliminary report

TABLES FOR He I LINES STARK BROADENING PARAMETERS

Milan S. Dimitrijević[1] and Sylvie Sahal–Bréchot[2]

[1]*Astronomical Observatory, Volgina 7, 11050 Beograd, Yugoslavia*
[2]*Observatoire de Paris–Meudon, 92195 Meudon, France*

(Received: August 3, 1989)

SUMMARY: Using a semiclassical approach for the Stark broadening of atomic lines, we have calculated electron–, proton–, and ionized helium–impact line widths and shifts for 79 neutral helium multiplets in the ultraviolet, visible and infrared regions of the spectrum.

Stark broadening data for neutral helium lines are of particular interest for a large number of problems in astrophysics as well as in laboratory plasma spectroscopy. Using a semiclassical–perturbational approach (Sahal–Bréchot, 1969a, b) we have calculated recently (Dimitrijević and Sahal–Bréchot, 1989) electron–, proton– and ionized helium–impact braodening parameters for 77 He I multiplets at perturber density 10^{13} cm^{-3}. For higher densities the departure from the linear density law due to Debye screening influences on the accuracy of the method (this is especially serious in the case of the shift) making that extrapolation to higher densities is sometimes difficult and inaccurate.

In order to enable such extrapolation we calculated Stark broadening data for 79 He I multiplets for perturber densities 10^{14}–10^{19}cm^{-3}, when validity conditions of the theory are satisfied. All details of the calculation are given in Dimitrijević and Sahal–Bréchot (1989). For the discussion and the comparison with experimental data see also Dimitrijević and Sahal–Bréchot (1984a, b; 1985).

The calculated values are divided in three parts. Table 1 contains results for lines with $\lambda \leqslant 2500$ Å, Table 2 for lines with 2500 Å $< \lambda \leqslant 7000$ Å, while in Table 3 results for $\lambda > 7000$ Å are presented. Data for needed energy levels were taken from Martin (1973).

We checked that for each value given in the tables the collision volume (V) multiplied by the perturber density (NE) is much smaller than one. In such a case the impact approximation is valid (Sahal–Bréchot, 1969). The value for which NE · V > 0.5 are not given in the tables, while values were $0.1 <$ NE · V $\leqslant 0.5$ are denoted with an asterisk and are given in order to enable interpolation to lower densities. In the cases when the impact approximation is not valid, the ion broadening contribution may be estimated by the quasistatic ion–broadening parameter (Griem, 1974) introduced by Griem et al. (1962).

A review of experimental data may be found in Konjević, Roberts (1976) nad Konjević, Dimitrijević, Wiese (1984).

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Table 1. This table lists electron–, proton– and ionized helium–impact broadening parameters for He I resonance lines for perturbe density 10^{14} cm^{-3} and temperatures from 10000 K to 200000 K. Transitions and averaged wavelengths for the multiplet (in Å) ar also given. Under 2W are given full halfwidths (in Å) while D denote corresponding shifts. If we divide c by 2W, we obtain an estimat for the maximum perturber density for which the line may be treated as isolated and the tabulated values may be used. Asteris denotes cases when the collision volume multiplied by the electron density (condition for the validity of the impact approximation lies between 0.1 and 0.5.

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
1S - 3P	10000.	0.673E-04	-0.209E-04	0.240E-04	-0.219E-04	0.206E-04	-0.187E-04
537.0A	20000.	0.633E-04	-0.134E-04	0.270E-04	-0.247E-04	0.231E-04	-0.212E-04
c= 0.30E+16	40000.	0.582E-04	-0.751E-05	0.308E-04	-0.278E-04	0.260E-04	-0.239E-04
	100000.	0.510E-04	-0.273E-05	0.367E-04	-0.333E-04	0.309E-04	-0.279E-04
	150000.	0.477E-04	-0.180E-05	0.388E-04	-0.364E-04	0.335E-04	-0.301E-04
	200000.	0.453E-04	-0.130E-05	0.395E-04	-0.388E-04	0.354E-04	-0.319E-04
1S - 4P	10000.	0.273E-03	-0.817E-04	0.102E-03	-0.921E-04	0.876E-04	-0.787E-04
522.2A	20000.	0.254E-03	-0.487E-04	0.116E-03	-0.105E-03	0.984E-04	-0.896E-04
c= 0.13E+16	40000.	0.229E-03	-0.215E-04	0.132E-03	-0.119E-03	0.111E-03	-0.102E-03
	100000.	0.196E-03	-0.983E-05	0.157E-03	-0.143E-03	0.132E-03	-0.119E-03
	150000.	0.180E-03	-0.619E-05	0.165E-03	-0.157E-03	0.143E-03	-0.129E-03
	200000.	0.169E-03	-0.320E-05	0.167E-03	-0.167E-03	0.152E-03	-0.137E-03
1S - 5P	10000.	0.765E-03	-0.213E-03	0.298E-03*	-0.263E-03*	0.256E-03*	-0.224E-03*
516.6A	20000.	0.704E-03	-0.126E-03	0.338E-03*	-0.302E-03*	0.287E-03*	-0.258E-03*
c= 0.66E+15	40000.	0.630E-03	-0.505E-04	0.388E-03	-0.345E-03	0.325E-03*	-0.294E-03*
	100000.	0.529E-03	-0.210E-04	0.458E-03	-0.419E-03	0.389E-03	-0.348E-03
	150000.	0.484E-03	-0.108E-04	0.475E-03	-0.460E-03	0.421E-03	-0.378E-03
	200000.	0.452E-03	0.220E-05	0.476E-03	-0.490E-03	0.443E-03	-0.401E-03
1S - 6P	10000.	0.174E-02	-0.373E-03				
512.1A	20000.	0.159E-02	-0.250E-03	0.815E-03*	-0.710E-03*		
c= 0.37E+15	40000.	0.141E-02	-0.938E-04	0.937E-03*	-0.821E-03*	0.782E-03*	-0.696E-03*
	100000.	0.117E-02	-0.370E-04	0.109E-02*	-0.101E-02*	0.938E-03*	-0.833E-03*
	150000.	0.107E-02	0.261E-05	0.112E-02*	-0.111E-02*	0.101E-02*	-0.907E-03*
	200000.	0.992E-03	0.580E-05	0.110E-02*	-0.118E-02*	0.106E-02*	-0.967E-03*
1S - 7P	10000.	0.345E-02	-0.658E-03				
510.0A	20000.	0.313E-02	-0.257E-03				
c= 0.23E+15	40000.	0.276E-02	-0.158E-03				
	100000.	0.227E-02	0.281E-05				
	150000.	0.206E-02	0.796E-05	0.228E-02*	-0.233E-02*		
	200000.	0.192E-02	0.932E-05	0.221E-02*	-0.246E-02*		
1S - 8P	10000.	0.599E-02	-0.104E-02				
508.6A	20000.	0.543E-02	-0.662E-03				
c= 0.17E+15	40000.	0.480E-02	-0.234E-03				
	100000.	0.395E-02	-0.855E-04				
	150000.	0.358E-02	0.231E-04				
	200000.	0.332E-02	0.202E-04				
1S - 9P	10000.	0.981E-02	-0.154E-02				
507.7A	20000.	0.890E-02	-0.906E-03				
c= 0.12E+15	40000.	0.786E-02	-0.348E-03				
	100000.	0.645E-02	-0.105E-03				
	150000.	0.584E-02	0.353E-04				
	200000.	0.541E-02	0.282E-04				
1S -10P	10000.	0.152E-01	-0.202E-02				
507.1A	20000.	0.138E-01	-0.108E-02				
c= 0.75E+14	40000.	0.122E-01	-0.479E-03				
	100000.	0.999E-02	-0.106E-03				
	150000.	0.903E-02	0.474E-04				
	200000.	0.836E-02	0.362E-04				

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
1S - 2P	10000.	0.330E-04	0.890E-06	0.967E-05	-0.206E-05	0.964E-05	-0.177E-05
584.3A	20000.	0.363E-04	0.442E-05	0.970E-05	-0.232E-05	0.966E-05	-0.199E-05
c= 0.17E+18	40000.	0.395E-04	0.712E-05	0.974E-05	-0.260E-05	0.969E-05	-0.224E-05
	100000.	0.437E-04	0.768E-05	0.982E-05	-0.304E-05	0.974E-05	-0.261E-05
	150000.	0.451E-04	0.675E-05	0.988E-05	-0.324E-05	0.977E-05	-0.279E-05
	200000.	0.456E-04	0.617E-05	0.994E-05	-0.341E-05	0.980E-05	-0.292E-05
1S - 3P	10000.	0.673E-03	-0.207E-03	0.240E-03	-0.211E-03	0.206E-03	-0.180E-03
537.0A	20000.	0.633E-03	-0.134E-03	0.270E-03	-0.241E-03.	0.231E-03	-0.206E-03
c= 0.30E+16	40000.	0.582E-03	-0.751E-04	0.309E-03	-0.275E-03	0.260E-03	-0.235E-03
	100000.	0.510E-03	-0.273E-04	0.367E-03	-0.331E-03	0.309E-03	-0.278E-03
	150000.	0.477E-03	-0.180E-04	0.388E-03	-0.362E-03	0.335E-03	-0.299E-03
	200000.	0.453E-03	-0.130E-04	0.395E-03	-0.386E-03	0.354E-03	-0.317E-03
1S - 4P	10000.	0.273E-02	-0.770E-03	0.102E-02*	-0.853E-03*	0.876E-03*	-0.719E-03*
522.2A	20000.	0.254E-02	-0.474E-03	0.115E-02*	-0.999E-03*	0.983E-03*	-0.848E-03*
c= 0.13E+16	40000.	0.229E-02	-0.213E-03	0.132E-02*	-0.115E-02*	0.111E-02*	-0.981E-03*
	100000.	0.195E-02	-0.983E-04	0.157E-02	-0.141E-02	0.132E-02*	-0.117E-02*
	150000.	0.180E-02	-0.619E-04	0.165E-02	-0.155E-02	0.143E-02*	-0.127E-02*
	200000.	0.169E-02	-0.320E-04	0.167E-02	-0.165E-02	0.152E-02*	-0.135E-02*
1S - 5P	10000.	0.751E-02	-0.186E-02				
516.6A	20000.	0.694E-02	-0.117E-02				
c= 0.66E+15	40000.	0.623E-02	-0.489E-03				
	100000.	0.524E-02	-0.210E-03	0.458E-02*	-0.408E-02*		
	150000.	0.480E-02	-0.108E-03	0.475E-02*	-0.451E-02*		
	200000.	0.449E-02	0.220E-04	0.476E-02*	-0.482E-02*		
1S - 6P	10000.	0.163E-01	-0.299E-02				
512.1A	20000.	0.151E-01	-0.215E-02				
c= 0.37E+15	40000.	0.136E-01	-0.856E-03				
	100000.	0.114E-01	-0.370E-03				
	150000.	0.104E-01	0.261E-04				
	200000.	0.968E-02	0.580E-04				
1S - 7P	10000.	0.303E-01	-0.461E-02				
510.0A	20000.	0.283E-01	-0.215E-02				
c= 0.23E+15	40000.	0.255E-01	-0.128E-02				
	100000.	0.214E-01	0.281E-04				
	150000.	0.195E-01	0.796E-04				
	200000.	0.182E-01	0.932E-04				
1S - 8P	10000.	0.497E-01	-0.648E-02				
508.6A	20000.	0.471E-01	-0.473E-02				
c= 0.17E+15	40000.	0.429E-01	-0.166E-02				
	100000.	0.363E-01	-0.855E-03				
	150000.	0.332E-01	0.231E-03				
	200000.	0.309E-01	0.202E-03				
1S - 9P	10000.	0.760E-01	-0.863E-02				
507.7A	20000.	0.734E-01	-0.618E-02				
c= 0.12E+15	40000.	0.676E-01	-0.207E-02				
	100000.	0.576E-01	-0.105E-02				
	150000.	0.527E-01	0.353E-03				
	200000.	0.492E-01	0.282E-03				
1S -10P	10000.	0.109	-0.103E-01				
507.1A	20000.	0.108	-0.740E-02				
c= 0.75E+14	40000.	0.101	-0.237E-02				
	100000.	0.865E-01	-0.106E-02				
	150000.	0.793E-01	0.474E-03				
	200000.	0.741E-01	0.362E-03				

NE=0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
1S - 2P	10000.	0.330E-03	0.908E-05	0.966E-04	-0.205E-04	0.964E-04	-0.175E-04
584.3A	20000.	0.363E-03	0.442E-04	0.970E-04	-0.230E-04	0.966E-04	-0.198E-04
c= 0.17E+18	40000.	0.395E-03	0.712E-04	0.974E-04	-0.259E-04	0.969E-04	-0.223E-04
	100000.	0.437E-03	0.768E-04	0.982E-04	-0.303E-04	0.974E-04	-0.260E-04
	150000.	0.451E-03	0.675E-04	0.988E-04	-0.324E-04	0.977E-04	-0.279E-04
	200000.	0.456E-03	0.617E-04	0.994E-04	-0.341E-04	0.980E-04	-0.292E-04
1S - 3P	10000.	0.668E-02	-0.182E-02	0.239E-02*	-0.188E-02*	0.206E-02*	-0.156E-02*
537.0A	20000.	0.630E-02	-0.122E-02	0.270E-02*	-0.225E-02*	0.231E-02*	-0.190E-02*
c= 0.30E+16	40000.	0.579E-02	-0.719E-03	0.308E-02*	-0.263E-02*	0.260E-02*	-0.223E-02*
	100000.	0.508E-02	-0.268E-03	0.367E-02*	-0.323E-02*	0.309E-02*	-0.270E-02*
	150000.	0.476E-02	-0.180E-03	0.388E-02	-0.356E-02	0.335E-02*	-0.293E-02*
	200000.	0.452E-02	-0.130E-03	0.395E-02	-0.381E-02	0.354E-02*	-0.312E-02*
1S - 4P	10000.	0.256E-01	-0.580E-02				
522.2A	20000.	0.241E-01	-0.387E-02				
c= 0.13E+16	40000.	0.220E-01	-0.198E-02				
	100000.	0.190E-01	-0.914E-03				
	150000.	0.176E-01	-0.619E-03				
	200000.	0.165E-01	-0.320E-03				
1S - 5P	10000.	0.632E-01	-0.116E-01				
516.6A	20000.	0.610E-01	-0.811E-02				
c= 0.66E+15	40000.	0.563E-01	-0.408E-02				
	100000.	0.487E-01	-0.166E-02				
	150000.	0.450E-01	-0.108E-02				
	200000.	0.423E-01	0.220E-03				
1S - 6P	10000.	0.122	-0.174E-01				
512.1A	20000.	0.122	-0.126E-01				
c= 0.37E+15	40000.	0.115	-0.593E-02				
	100000.	0.101	-0.223E-02				
	150000.	0.931E-01	0.261E-03				
	200000.	0.876E-01	0.580E-03				
1S - 7P	10000.	0.202	-0.234E-01				
510.0A	20000.	0.212	-0.136E-01				
c= 0.23E+15	40000.	0.205	-0.721E-02				
	100000.	0.182	0.281E-03				
	150000.	0.170	0.796E-03				
	200000.	0.160	0.932E-03				
1S - 8P	10000.	0.301	-0.280E-01				
508.6A	20000.	0.332	-0.213E-01				
c= 0.17E+15	40000.	0.331	-0.717E-02				
	100000.	0.301	-0.303E-02				
	150000.	0.281	0.231E-02				
	200000.	0.266	0.202E-02				
1S - 9P	10000.	0.411*	-0.334E-01*				
507.7A	20000.	0.483	-0.243E-01				
c= 0.12E+15	40000.	0.499	-0.726E-02				
	100000.	0.464	-0.379E-02				
	150000.	0.436	0.353E-02				
	200000.	0.413	0.282E-02				
1S -10P	10000.	0.526*	-0.332E-01*				
507.1A	20000.	0.659*	-0.247E-01*				
c= 0.75E+14	40000.	0.709	-0.681E-02				
	100000.	0.676	-0.442E-02				
	150000.	0.639	0.474E-02				
	200000.	0.608	0.362E-02				

NE= 0.1E+18

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
1S - 2P	10000.	0.330E-02	0.973E-04	0.963E-03	-0.198E-03	0.959E-03	-0.169E-03
584.3A	20000.	0.363E-02	0.447E-03	0.968E-03	-0.226E-03	0.964E-03	-0.193E-03
c= 0.17E+18	40000.	0.395E-02	0.714E-03	0.973E-03	-0.256E-03	0.968E-03	-0.220E-03
	100000.	0.437E-02	0.768E-03	0.982E-03	-0.301E-03	0.974E-03	-0.258E-03
	150000.	0.451E-02	0.675E-03	0.988E-03	-0.323E-03	0.977E-03	-0.277E-03
	200000.	0.456E-02	0.617E-03	0.994E-03	-0.340E-03	0.980E-03	-0.291E-03
1S - 3P	10000.	0.592E-01	-0.120E-01				
537.0A	20000.	0.577E-01	-0.812E-02				
c= 0.30E+16	40000.	0.542E-01	-0.520E-02				
	100000.	0.485E-01	-0.234E-02				
	150000.	0.457E-01	-0.153E-02				
	200000.	0.435E-01	-0.112E-02				
1S - 4P	10000.	0.185	-0.305E-01				
522.2A	20000.	0.192	-0.234E-01				
c= 0.13E+16	40000.	0.186	-0.154E-01				
	100000.	0.168	-0.632E-02				
	150000.	0.158	-0.380E-02				
	200000.	0.150	-0.205E-02				
NE= 0.1E+19							
1S - 2P	10000.	0.330E-01	0.117E-02	0.931E-02	-0.178E-02	0.908E-02	-0.149E-02
584.3A	20000.	0.363E-01	0.457E-02	0.957E-02	-0.212E-02	0.946E-02	-0.179E-02
c= 0.17E+18	40000.	0.395E-01	0.719E-02	0.969E-02	-0.247E-02	0.962E-02	-0.210E-02
	100000.	0.437E-01	0.769E-02	0.981E-02	-0.295E-02	0.972E-02	-0.252E-02
	150000.	0.451E-01	0.676E-02	0.988E-02	-0.318E-02	0.976E-02	-0.272E-02
	200000.	0.456E-01	0.617E-02	0.993E-02	-0.336E-02	0.979E-02	-0.287E-02
NE= 0.1E+20							
1S - 2P	10000.	0.323	0.193E-01				
584.3A	20000.	0.361	0.514E-01				
c= 0.17E+18	40000.	0.394	0.754E-01				
	100000.	0.436	0.783E-01	0.971E-01*-0.275E-01*			
	150000.	0.450	0.678E-01	0.982E-01*-0.302E-01*		0.967E-01*-0.256E-01*	
	200000.	0.455	0.619E-01	0.990E-01*-0.322E-01*		0.974E-01*-0.273E-01*	

Table 2. Same as in Table 1 but for the He I lines in the range $2500 < \lambda$ (Å) $\leqslant 7000$, for temperatures from 5000 to 80000 K

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2S - 3P	5000.	0.634E-02	-0.272E-02	0.187E-02	-0.169E-02	0.162E-02	-0.145E-02
5015.7A	10000.	0.601E-02	-0.196E-02	0.210E-02	-0.192E-02	0.181E-02	-0.164E-02
c= 0.26E+18	20000.	0.572E-02	-0.126E-02	0.237E-02	-0.216E-02	0.203E-02	-0.186E-02
	30000.	0.552E-02	-0.861E-03	0.256E-02	-0.232E-02	0.217E-02	-0.199E-02
	40000.	0.536E-02	-0.722E-03	0.270E-02	-0.244E-02	0.228E-02	-0.209E-02
	80000.	0.494E-02	-0.465E-03	0.310E-02	-0.279E-02	0.259E-02	-0.236E-02
2S - 4P	5000.	0.168E-01	-0.667E-02	0.524E-02	-0.464E-02	0.451E-02	-0.395E-02
3964.7A	10000.	0.158E-01	-0.343E-02	0.589E-02	-0.531E-02	0.505E-02	-0.454E-02
c= 0.73E+17	20000.	0.148E-01	-0.221E-02	0.666E-02	-0.604E-02	0.567E-02	-0.517E-02
	30000.	0.140E-01	-0.169E-02	0.720E-02	-0.650E-02	0.608E-02	-0.556E-02
	40000.	0.134E-01	-0.136E-02	0.762E-02	-0.686E-02	0.640E-02	-0.586E-02
	80000.	0.120E-01	-0.777E-03	0.873E-02	-0.786E-02	0.730E-02	-0.662E-02
2S - 5P	5000.	0.400E-01	-0.130E-01	0.130E-01*	-0.111E-01*	0.111E-01*	-0.934E-02
3613.8A	10000.	0.375E-01	-0.923E-02	0.146E-01*	-0.129E-01*	0.125E-01*	-0.109E-01
c= 0.32E+17	20000.	0.345E-01	-0.445E-02	0.165E-01*	-0.148E-01*	0.141E-01*	-0.126E-01
	30000.	0.325E-01	-0.316E-02	0.179E-01	-0.159E-01	0.151E-01*	-0.136E-01
	40000.	0.309E-01	-0.250E-02	0.190E-01	-0.169E-01	0.159E-01*	-0.144E-01
	80000.	0.273E-01	-0.496E-03	0.217E-01	-0.195E-01	0.182E-01	-0.163E-01
2S - 6P	5000.	0.845E-01	-0.284E-01				
3447.6A	10000.	0.790E-01	-0.176E-01				
c= 0.17E+17	20000.	0.721E-01	-0.802E-02	0.369E-01*	-0.322E-01*		
	30000.	0.673E-01	-0.552E-02	0.401E-01*	-0.350E-01*		
	40000.	0.640E-01	-0.439E-02	0.425E-01*	-0.372E-01*	0.354E-01*	-0.315E-01
	80000.	0.558E-01	-0.342E-03	0.481E-01*	-0.434E-01*	0.407E-01*	-0.361E-01
2S - 7P	5000.	0.160	-0.420E-01				
3354.6A	10000.	0.149	-0.302E-01				
c= 0.99E+16	20000.	0.135	-0.749E-02				
	30000.	0.126	-0.913E-02				
	40000.	0.120	-0.739E-02				
	80000.	0.104	-0.306E-03				
2S - 8P	5000.	0.268	-0.659E-01				
3296.8A	10000.	0.252	-0.319E-01				
c= 0.70E+16	20000.	0.228	-0.205E-01				
	30000.	0.213	-0.145E-01				
	40000.	0.202	-0.116E-01				
	80000.	0.175	-0.566E-03				
2S - 9P	5000.	0.429	-0.105				
3258.3A	10000.	0.404	-0.684E-01				
c= 0.48E+16	20000.	0.366	-0.292E-01				
	30000.	0.342	-0.213E-01				
	40000.	0.324	-0.515E-02				
	80000.	0.280	-0.985E-03				
2S -10P	5000.	0.649	-0.886E-01				
3231.3A	10000.	0.617	-0.886E-01				
c= 0.31E+16	20000.	0.560	-0.384E-01				
	30000.	0.523	-0.948E-02				
	40000.	0.495	-0.221E-01				
	80000.	0.428	-0.140E-02				

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 4S	5000.	0.104E-01	0.778E-02	0.230E-02	0.212E-02	0.198E-02	0.181E-02
5047.7A	10000.	0.107E-01	0.763E-02	0.259E-02	0.241E-02	0.222E-02	0.206E-02
c= 0.14E+19	20000.	0.110E-01	0.659E-02	0.291E-02	0.272E-02	0.250E-02	0.234E-02
	30000.	0.112E-01	0.563E-02	0.311E-02	0.292E-02	0.267E-02	0.250E-02
	40000.	0.114E-01	0.504E-02	0.326E-02	0.306E-02	0.280E-02	0.263E-02
	80000.	0.112E-01	0.365E-02	0.367E-02	0.345E-02	0.315E-02	0.296E-02
2P - 5S	5000.	0.228E-01	0.169E-01	0.516E-02	0.465E-02	0.443E-02	0.397E-02
4437.6A	10000.	0.232E-01	0.160E-01	0.579E-02	0.532E-02	0.497E-02	0.455E-02
c= 0.55E+18	20000.	0.236E-01	0.127E-01	0.650E-02	0.604E-02	0.558E-02	0.517E-02
	30000.	0.242E-01	0.104E-01	0.696E-02	0.650E-02	0.598E-02	0.557E-02
	40000.	0.243E-01	0.906E-02	0.730E-02	0.684E-02	0.627E-02	0.586E-02
	80000.	0.233E-01	0.595E-02	0.822E-02	0.770E-02	0.704E-02	0.661E-02
2P - 6S	5000.	0.483E-01	0.340E-01	0.108E-01*	0.950E-02*	0.929E-02*	0.806E-02*
4169.0A	10000.	0.472E-01	0.305E-01	0.121E-01	0.110E-01	0.104E-01*	0.935E-02*
c= 0.28E+18	20000.	0.484E-01	0.227E-01	0.136E-01	0.125E-01	0.117E-01	0.107E-01
	30000.	0.502E-01	0.184E-01	0.146E-01	0.135E-01	0.125E-01	0.116E-01
	40000.	0.497E-01	0.155E-01	0.153E-01	0.142E-01	0.132E-01	0.122E-01
	80000.	0.462E-01	0.912E-02	0.172E-01	0.161E-01	0.148E-01	0.138E-01
2P - 7S	5000.	0.924E-01	0.623E-01	0.209E-01*	0.177E-01*	0.179E-01*	0.149E-01*
4024.0A	10000.	0.880E-01	0.528E-01	0.234E-01*	0.207E-01*	0.201E-01*	0.176E-01*
c= 0.16E+18	20000.	0.918E-01	0.376E-01	0.263E-01*	0.239E-01*	0.226E-01*	0.204E-01*
	30000.	0.942E-01	0.302E-01	0.282E-01*	0.258E-01*	0.242E-01*	0.220E-01*
	40000.	0.919E-01	0.232E-01	0.296E-01*	0.272E-01*	0.254E-01*	0.233E-01*
	80000.	0.854E-01	0.127E-01	0.333E-01	0.309E-01	0.285E-01*	0.264E-01*
2P - 8S	5000.	0.162	0.108				
3935.9A	10000.	0.158	0.860E-01				
c= 0.10E+18	20000.	0.163	0.583E-01	0.474E-01*	0.423E-01*		
	30000.	0.164	0.461E-01	0.507E-01*	0.459E-01*		
	40000.	0.159	0.360E-01	0.533E-01*	0.485E-01*	0.457E-01*	0.415E-01*
	80000.	0.148	0.173E-01	0.601E-01*	0.553E-01*	0.514E-01*	0.473E-01*
2P - 3D	5000.	0.746E-02	0.296E-02	0.232E-02	0.212E-02	0.200E-02	0.182E-02
6678.1A	10000.	0.697E-02	0.248E-02	0.261E-02	0.241E-02	0.224E-02	0.206E-02
c= 0.47E+18	20000.	0.632E-02	0.194E-02	0.296E-02	0.271E-02	0.252E-02	0.233E-02
	30000.	0.594E-02	0.164E-02	0.321E-02	0.291E-02	0.270E-02	0.249E-02
	40000.	0.567E-02	0.141E-02	0.340E-02	0.307E-02	0.285E-02	0.262E-02
	80000.	0.515E-02	0.923E-03	0.387E-02	0.353E-02	0.325E-02	0.295E-02
2P - 4D	5000.	0.388E-01	0.909E-02	0.255E-01*	0.211E-01*	0.213E-01*	0.176E-01*
4921.9A	10000.	0.339E-01	0.632E-02	0.286E-01*	0.253E-01*	0.244E-01*	0.208E-01*
c= 0.12E+17	20000.	0.289E-01	0.370E-02	0.297E-01*	0.299E-01*	0.278E-01*	0.245E-01*
	30000.	0.261E-01	0.292E-02	0.288E-01	0.322E-01	0.292E-01*	0.270E-01*
	40000.	0.242E-01	0.241E-02	0.274E-01	0.335E-01	0.297E-01*	0.289E-01*
	80000.	0.202E-01	0.151E-02	0.229E-01	0.346E-01	0.285E-01	0.329E-01
2P - 5D	5000.	0.945E-01	0.189E-01				
4387.9A	10000.	0.827E-01	0.126E-01				
c= 0.61E+16	20000.	0.706E-01	0.669E-02				
	30000.	0.637E-01	0.529E-02	0.752E-01*	0.788E-01*		
	40000.	0.591E-01	0.434E-02	0.725E-01*	0.828E-01*		
	80000.	0.488E-01	0.180E-02	0.613E-01*	0.879E-01*	0.747E-01*	0.812E-01*
2P - 6D	5000.	0.193	0.268E-01				
4143.8A	10000.	0.170	0.196E-01				
c= 0.26E+16	20000.	0.145	0.100E-01				
	30000.	0.131	0.796E-02				
	40000.	0.121	0.675E-02				
	80000.	0.100	0.234E-02				

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 7D	5000.	0.336	0.434E-01				
4009.3A	10000.	0.300	0.223E-01				
c= 0.21E+16	20000.	0.258	0.154E-01				
	30000.	0.234	0.123E-01				
	40000.	0.217	0.104E-01				
	80000.	0.180	0.507E-02				
2P - 8D	5000.	0.545	0.533E-01				
3926.5A	10000.	0.493	0.350E-01				
c= 0.26E+15	20000.	0.428	0.170E-01				
	30000.	0.389	0.135E-01				
	40000.	0.362	0.560E-02				
	80000.	0.300	0.336E-02				
2P - 9D	5000.	0.817	0.624E-01				
3871.8A	10000.	0.751	0.457E-01				
c= 0.60E+14	20000.	0.658	0.224E-01				
	30000.	0.601	0.179E-01				
	40000.	0.560	0.152E-01				
	80000.	0.466	0.380E-02				
2S - 3P	5000.	0.143E-02	0.772E-03	0.398E-03	0.320E-03	0.358E-03	0.274E-03
3888.7A	10000.	0.166E-02	0.628E-03	0.434E-03	0.360E-03	0.387E-03	0.310E-03
c= 0.81E+18	20000.	0.182E-02	0.494E-03	0.477E-03	0.406E-03	0.422E-03	0.348E-03
	30000.	0.188E-02	0.406E-03	0.505E-03	0.435E-03	0.445E-03	0.373E-03
	40000.	0.191E-02	0.340E-03	0.526E-03	0.456E-03	0.463E-03	0.392E-03
	80000.	0.193E-02	0.224E-03	0.585E-03	0.513E-03	0.510E-03	0.441E-03
2S - 4P	5000.	0.439E-02	0.232E-02	0.116E-02	0.981E-03	0.103E-02	0.838E-03
3187.7A	10000.	0.500E-02	0.179E-02	0.129E-02	0.111E-02	0.113E-02	0.954E-03
c= 0.23E+18	20000.	0.527E-02	0.131E-02	0.142E-02	0.126E-02	0.125E-02	0.108E-02
	30000.	0.533E-02	0.926E-03	0.152E-02	0.135E-02	0.132E-02	0.116E-02
	40000.	0.534E-02	0.742E-03	0.159E-02	0.142E-02	0.138E-02	0.122E-02
	80000.	0.521E-02	0.352E-03	0.178E-02	0.160E-02	0.153E-02	0.137E-02
2S - 5P	5000.	0.114E-01	0.519E-02	0.296E-02	0.250E-02	0.259E-02	0.213E-02
2945.1A	10000.	0.128E-01	0.422E-02	0.328E-02	0.286E-02	0.286E-02	0.244E-02
c= 0.10E+18	20000.	0.131E-01	0.267E-02	0.365E-02	0.325E-02	0.317E-02	0.278E-02
	30000.	0.132E-01	0.182E-02	0.390E-02	0.350E-02	0.338E-02	0.300E-02
	40000.	0.131E-01	0.148E-02	0.409E-02	0.369E-02	0.353E-02	0.316E-02
	80000.	0.125E-01	0.602E-03	0.461E-02	0.417E-02	0.394E-02	0.356E-02
2S - 6P	5000.	0.256E-01	0.101E-01	0.653E-02*	0.542E-02*	0.569E-02*	0.459E-02*
2829.1A	10000.	0.280E-01	0.809E-02	0.727E-02*	0.628E-02*	0.632E-02*	0.535E-02*
c= 0.54E+17	20000.	0.285E-01	0.434E-02	0.811E-02	0.719E-02	0.702E-02*	0.615E-02*
	30000.	0.284E-01	0.326E-02	0.867E-02	0.775E-02	0.748E-02	0.664E-02
	40000.	0.281E-01	0.259E-02	0.909E-02	0.817E-02	0.783E-02	0.700E-02
	80000.	0.264E-01	0.113E-02	0.103E-01	0.929E-02	0.877E-02	0.793E-02
2P - 4S	5000.	0.585E-02	0.448E-02	0.128E-02	0.118E-02	0.110E-02	0.101E-02
4713.2A	10000.	0.616E-02	0.467E-02	0.143E-02	0.134E-02	0.123E-02	0.115E-02
c= 0.20E+19	20000.	0.638E-02	0.440E-02	0.161E-02	0.151E-02	0.138E-02	0.130E-02
	30000.	0.642E-02	0.390E-02	0.172E-02	0.162E-02	0.148E-02	0.139E-02
	40000.	0.658E-02	0.347E-02	0.181E-02	0.170E-02	0.155E-02	0.146E-02
	80000.	0.684E-02	0.278E-02	0.203E-02	0.191E-02	0.174E-02	0.164E-02
2P - 5S	5000.	0.136E-01	0.103E-01	0.290E-02	0.264E-02	0.249E-02	0.225E-02
4120.8A	10000.	0.135E-01	0.984E-02	0.325E-02	0.301E-02	0.279E-02	0.257E-02
c= 0.77E+18	20000.	0.137E-01	0.864E-02	0.365E-02	0.341E-02	0.314E-02	0.292E-02
	30000.	0.142E-01	0.731E-02	0.391E-02	0.367E-02	0.336E-02	0.314E-02
	40000.	0.146E-01	0.639E-02	0.410E-02	0.385E-02	0.352E-02	0.330E-02
	80000.	0.148E-01	0.460E-02	0.461E-02	0.433E-02	0.396E-02	0.372E-02

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1986 MON.	DAY	ALPHA 1950 H	M	S	DELTA 1950 °	'	"	RESIDUALS M
401	1986RQ5	10428	9	14.397915	23	40	36.443	-14	32	01.49	
402	1986RQ5	10428	9	14.402081	23	40	36.230	-14	32	02.75	
403	1986RP5	10348	9	9.296873	23	39	2.059	-14	03	06.69	
404	1986RP5	10348	9	9.301735	23	39	1.789	-14	03	06.59	
405	1986RP5	10348	9	9.306597	23	39	1.520	-14	03	06.43	
406	1986RP5	10410	9	12.393749	23	36	7.055	-14	03	08.15	
407	1986RP5	10410	9	12.397915	23	36	6.815	-14	03	08.00	
408	1986RP5	10410	9	12.402082	23	36	6.581	-14	03	07.71	
409	1986RP5	10422	9	13.392361	23	35	10.061	-14	02	53.10	
410	1986RP5	10422	9	13.397915	23	35	9.741	-14	02	53.05	
411	1986RP5	10422	9	13.402081	23	35	9.505	-14	02	53.04	
412	1986RP5	10428	9	14.393749	23	34	12.674	-14	02	31.77	
413	1986RP5	10428	9	14.397915	23	34	12.437	-14	02	31.64	
414	1986RP5	10428	9	14.402081	23	34	12.200	-14	02	31.55	
415	1986QB3	11157	8	29.256248	22	50	53.864	-12	07	16.82	
416	1986QB3	11157	8	29.262152	22	50	53.600	-12	07	18.62	
417	1986QB3	11157	8	29.268055	22	50	53.353	-12	07	20.24	
418	1986QB3	10158	8	29.277777	22	50	52.928	-12	07	23.11	
419	1986QB3	10158	8	29.283333	22	50	52.680	-12	07	24.75	
420	1986QB3	10158	8	29.288887	22	50	52.431	-12	07	26.24	
421	1986QB3	10175	8	31.356596	22	49	22.188	-12	17	35.91	
422	1986QB3	10175	8	31.361458	22	49	21.957	-12	17	37.48	
423	1986QB3	10175	8	31.366318	22	49	21.753	-12	17	38.93	
424	1986QB3	11188	9	1.260763	22	48	42.591	-12	22	01.51	
425	1986QB3	11188	9	1.265623	22	48	42.377	-12	22	02.71	
426	1986QB3	11188	9	1.270485	22	48	42.144	-12	22	04.09	
427	1986QB3	10190	9	1.313541	22	48	40.179	-12	22	16.46	
428	1986QB3	10190	9	1.318401	22	48	39.937	-12	22	17.86	
429	1986QB3	10190	9	1.323263	22	48	39.734	-12	22	19.26	
430	1986QB3	10206	9	2.362499	22	47	53.817	-12	27	19.41	
431	1986QB3	10206	9	2.366665	22	47	53.647	-12	27	20.71	
432	1986QB3	10206	9	2.370832	22	47	53.479	-12	27	22.27	
433	1986QB3	10218	9	3.276041	22	47	13.555	-12	31	42.72	
434	1986QB3	10218	9	3.280901	22	47	13.347	-12	31	44.15	
435	1986QB3	10218	9	3.285763	22	47	13.144	-12	31	45.43	
436	1986QB3	10237	9	4.300346	22	46	28.127	-12	36	33.86	
437	1986QB3	10237	9	4.305902	22	46	27.691	-12	36	35.47	
438	1986QB3	10237	9	4.310762	22	46	27.697	-12	36	36.66	
439	1986QB3	10260	9	5.359373	22	45	41.245	-12	41	30.41	
440	1986QB3	10260	9	5.364235	22	45	41.035	-12	41	31.70	
441	1986QB3	10260	9	5.369097	22	45	40.819	-12	41	33.04	
442	1986QB3	10283	9	6.366665	22	44	56.742	-12	46	07.17	
443	1986QB3	10283	9	6.370832	22	44	56.574	-12	46	08.42	
444	1986QB3	10283	9	6.374998	22	44	56.373	-12	46	09.67	
445	1986QB3	10302	9	7.292707	22	44	16.069	-12	50	19.40	
446	1986QB3	10302	9	7.297569	22	44	15.871	-12	50	20.76	
447	1986QB3	10302	9	7.302429	22	44	15.658	-12	50	22.38	
448	1986QB3	10304	9	7.324652	22	44	14.650	-12	50	28.66	
449	1986QB3	10304	9	7.329514	22	44	14.432	-12	50	30.00	
450	1986QB3	10304	9	7.334373	22	44	14.213	-12	50	31.13	

NE= 0.1E+15		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	2WE(A)	DE(A)	2WI(A)	DI(A)	2WI(A)	DI(A)
2P - 9D	5000.	0.583	-0.326E-01				
3587.3A	10000.	0.542	-0.172E-01				
c= 0.13E+16	20000.	0.485	-0.801E-02				
	30000.	0.448	-0.442E-02				
	40000.	0.421	-0.264E-02				
	80000.	0.358	0.403E-04				
2P -10D	5000.	0.843	-0.677E-01				
3554.4A	10000.	0.796	-0.506E-01				
c= 0.55E+15	20000.	0.719	-0.178E-01				
	30000.	0.667	-0.597E-02				
	40000.	0.629	-0.889E-02				
	80000.	0.535	-0.288E-03				
NE= 0.1E+16							
2S - 3P	5000.	0.634E-01	-0.267E-01	0.187E-01	-0.160E-01	0.162E-01	-0.135E-01
5015.7A	10000.	0.601E-01	-0.195E-01	0.210E-01	-0.185E-01	0.181E-01	-0.158E-01
c= 0.26E+18	20000.	0.572E-01	-0.126E-01	0.237E-01	-0.212E-01	0.203E-01	-0.181E-01
	30000.	0.552E-01	-0.861E-02	0.256E-01	-0.228E-01	0.217E-01	-0.195E-01
	40000.	0.536E-01	-0.722E-02	0.271E-01	-0.241E-01	0.228E-01	-0.206E-01
	80000.	0.494E-01	-0.465E-02	0.310E-01	-0.277E-01	0.259E-01	-0.234E-01
2S - 4P	5000.	0.168	-0.617E-01	0.523E-01*-0.408E-01*			
3964.7A	10000.	0.158	-0.338E-01	0.588E-01*-0.492E-01*		0.505E-01*-0.414E-01*	
c= 0.73E+17	20000.	0.147	-0.217E-01	0.665E-01*-0.576E-01*		0.567E-01*-0.489E-01*	
	30000.	0.140	-0.168E-01	0.719E-01*-0.627E-01*		0.608E-01*-0.534E-01*	
	40000.	0.134	-0.135E-01	0.762E-01*-0.664E-01*		0.640E-01*-0.566E-01*	
	80000.	0.119	-0.777E-02	0.872E-01*-0.771E-01*		0.729E-01*-0.647E-01*	
2S - 5P	5000.	0.390	-0.117				
3613.6A	10000.	0.368	-0.827E-01				
c= 0.32E+17	20000.	0.341	-0.431E-01				
	30000.	0.321	-0.306E-01				
	40000.	0.306	-0.242E-01				
	80000.	0.270	-0.496E-02				
2S - 6P	5000.	0.776	-0.211				
3447.6A	10000.	0.741	-0.142				
c= 0.17E+17	20000.	0.686	-0.744E-01				
	30000.	0.645	-0.505E-01				
	40000.	0.616	-0.401E-01				
	80000.	0.541	-0.342E-02				
2S - 7P	5000.	1.34	-0.300				
3354.6A	10000.	1.31	-0.217				
c= 0.99E+16	20000.	1.22	-0.749E-01				
	30000.	1.16	-0.766E-01				
	40000.	1.10	-0.612E-01				
	80000.	0.972	-0.307E-02				
2S - 8P	5000.	2.08	-0.426				
3296.8A	10000.	2.09	-0.262				
c= 0.70E+16	20000.	1.98	-0.164				
	30000.	1.88	-0.111				
	40000.	1.81	-0.876E-01				
	80000.	1.60	-0.566E-02				
2S - 9P	5000.	2.99	-0.555				
3258.3A	10000.	3.13	-0.406				
c= 0.48E+16	20000.	3.02	-0.210				
	30000.	2.89	-0.146				
	40000.	2.79	-0.515E-01				
	80000.	2.48	-0.985E-02				

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2S -10P	5000.	4.03	-0.609				
3231.3A	10000.	4.44	-0.485				
c= 0.31E+16	20000.	4.38	-0.245				
	30000.	4.23	-0.948E-01				
	40000.	4.09	-0.123				
	80000.	3.67	-0.140E-01				
2P - 4S	5000.	0.104	0.767E-01	0.230E-01	0.199E-01	0.198E-01	0.168E-01
5047.7A	10000.	0.107	0.759E-01	0.259E-01	0.231E-01	0.222E-01	0.197E-01
c= 0.14E+19	20000.	0.110	0.658E-01	0.290E-01	0.265E-01	0.249E-01	0.227E-01
	30000.	0.112	0.562E-01	0.311E-01	0.286E-01	0.267E-01	0.245E-01
	40000.	0.114	0.504E-01	0.326E-01	0.302E-01	0.280E-01	0.258E-01
	80000.	0.112	0.365E-01	0.367E-01	0.342E-01	0.315E-01	0.293E-01
2P - 5S	5000.	0.228	0.167	0.516E-01*	0.416E-01*	0.443E-01*	0.347E-01*
4437.6A	10000.	0.232	0.160	0.579E-01*	0.497E-01*	0.497E-01*	0.420E-01*
c= 0.55E+18	20000.	0.236	0.127	0.650E-01*	0.579E-01*	0.558E-01*	0.492E-01*
	30000.	0.242	0.104	0.696E-01*	0.629E-01*	0.597E-01*	0.536E-01*
	40000.	0.243	0.904E-01	0.730E-01	0.665E-01	0.627E-01*	0.568E-01*
	80000.	0.233	0.595E-01	0.821E-01	0.757E-01	0.704E-01*	0.648E-01*
2P - 6S	5000.	0.483	0.332				
4169.0A	10000.	0.472	0.304				
c= 0.28E+18	20000.	0.484	0.226				
	30000.	0.502	0.184	0.146*	0.129*		
	40000.	0.497	0.155	0.153*	0.137*		
	80000.	0.462	0.912E-01	0.172*	0.157*	0.148*	0.134*
2P - 7S	5000.	0.923	0.592				
4024.0A	10000.	0.880	0.519				
c= 0.16E+18	20000.	0.918	0.373				
	30000.	0.942	0.302				
	40000.	0.919	0.232				
	80000.	0.854	0.127				
2P - 8S	5000.	1.61	0.984				
3935.9A	10000.	1.58	0.830				
c= 0.10E+18	20000.	1.63	0.576				
	30000.	1.64	0.458				
	40000.	1.59	0.358				
	80000.	1.48	0.173				
2P - 3D	5000.	0.746E-01	0.290E-01	0.232E-01	0.203E-01	0.200E-01	0.172E-01
6678.1A	10000.	0.697E-01	0.244E-01	0.261E-01	0.233E-01	0.224E-01	0.199E-01
c= 0.47E+18	20000.	0.632E-01	0.193E-01	0.296E-01	0.266E-01	0.252E-01	0.228E-01
	30000.	0.594E-01	0.164E-01	0.321E-01	0.287E-01	0.270E-01	0.245E-01
	40000.	0.567E-01	0.141E-01	0.340E-01	0.304E-01	0.285E-01	0.259E-01
	80000.	0.515E-01	0.923E-02	0.387E-01	0.351E-01	0.325E-01	0.294E-01
2P - 4D	5000.	0.344	0.695E-01				
4921.9A	10000.	0.307	0.519E-01				
c= 0.12E+17	20000.	0.267	0.340E-01				
	30000.	0.243	0.272E-01				
	40000.	0.227	0.228E-01				
	80000.	0.191	0.151E-01	0.229*	0.334*		
2P - 5D	5000.	0.776	0.127				
4387.9A	10000.	0.708	0.921E-01				
	20000.	0.621	0.565E-01				
	30000.	0.568	0.445E-01				
	40000.	0.531	0.374E-01				
	80000.	0.446	0.180E-01				

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 6D	5000.	1.44	0.178				
4143.8A	10000.	1.35	0.132				
c= 0.26E+16	20000.	1.21	0.796E-01				
	30000.	1.11	0.627E-01				
	40000.	1.04	0.534E-01				
	80000.	0.878	0.234E-01				
2P - 7D	5000.	2.32	0.255				
4009.3A	10000.	2.26	0.165				
c= 0.21E+16	20000.	2.06	0.114				
	30000.	1.92	0.895E-01				
	40000.	1.80	0.756E-01				
	80000.	1.54	0.507E-01				
2P - 8D	5000.	3.40	0.275				
3926.5A	10000.	3.48	0.206				
c= 0.26E+15	20000.	3.25	0.128				
	30000.	3.05	0.102				
	40000.	2.89	0.560E-01				
	80000.	2.48	0.336E-01				
2P - 9D	5000.	4.66	0.318				
3871.8A	10000.	4.99	0.240				
c= 0.60E+14	20000.	4.80	0.152				
	30000.	4.55	0.120				
	40000.	4.34	0.102				
	80000.	3.77	0.380E-01				
2S - 3P	5000.	0.143E-01	0.771E-02	0.398E-02	0.310E-02	0.357E-02	0.264E-02
3888.7A	10000.	0.166E-01	0.628E-02	0.434E-02	0.353E-02	0.387E-02	0.302E-02
c= 0.81E+18	20000.	0.182E-01	0.494E-02	0.477E-02	0.401E-02	0.422E-02	0.344E-02
	30000.	0.188E-01	0.406E-02	0.505E-02	0.432E-02	0.445E-02	0.370E-02
	40000.	0.191E-01	0.340E-02	0.526E-02	0.453E-02	0.463E-02	0.389E-02
	80000.	0.193E-01	0.224E-02	0.585E-02	0.510E-02	0.510E-02	0.438E-02
2S - 4P	5000.	0.439E-01	0.226E-01	0.116E-01	0.916E-02	0.103E-01*	0.773E-01*
3187.7A	10000.	0.500E-01	0.177E-01	0.128E-01	0.107E-01	0.113E-01	0.907E-02
c= 0.23E+18	20000.	0.527E-01	0.131E-01	0.142E-01	0.123E-01	0.124E-01	0.105E-01
	30000.	0.533E-01	0.925E-02	0.152E-01	0.132E-01	0.132E-01	0.113E-01
	40000.	0.534E-01	0.742E-02	0.159E-01	0.140E-01	0.138E-01	0.119E-01
	80000.	0.521E-01	0.352E-02	0.178E-01	0.158E-01	0.153E-01	0.136E-01
2S - 5P	5000.	0.114	0.504E-01	0.295E-01*	0.220E-01*		
2945.1A	10000.	0.128	0.412E-01	0.328E-01*	0.265E-01*	0.286E-01*	0.223E-01*
c= 0.10E+18	20000.	0.131	0.266E-01	0.365E-01*	0.310E-01*	0.317E-01*	0.263E-01*
	30000.	0.132	0.181E-01	0.390E-01*	0.337E-01*	0.338E-01*	0.287E-01*
	40000.	0.131	0.147E-01	0.408E-01*	0.357E-01*	0.353E-01*	0.305E-01*
	80000.	0.125	0.602E-02	0.461E-01*	0.410E-01*	0.394E-01*	0.348E-01*
2S - 6P	5000.	0.256	0.963E-01				
2829.1A	10000.	0.280	0.770E-01				
c= 0.54E+17	20000.	0.285	0.434E-01				
	30000.	0.284	0.321E-01				
	40000.	0.280	0.255E-01				
	80000.	0.264	0.113E-01	0.103*	0.902E-01*		
2P - 4S	5000.	0.585E-01	0.445E-01	0.128E-01	0.112E-01	0.110E-01	0.954E-02
4713.2A	10000.	0.616E-01	0.465E-01	0.143E-01	0.130E-01	0.123E-01	0.111E-01
c= 0.20E+19	20000.	0.638E-01	0.440E-01	0.161E-01	0.148E-01	0.138E-01	0.127E-01
	30000.	0.642E-01	0.390E-01	0.172E-01	0.159E-01	0.148E-01	0.136E-01
	40000.	0.658E-01	0.347E-01	0.181E-01	0.168E-01	0.155E-01	0.144E-01
	80000.	0.684E-01	0.278E-01	0.203E-01	0.190E-01	0.174E-01	0.163E-01

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 5S	5000.	0.136	0.103	0.290E-01*	0.242E-01*	0.249E-01*	0.203E-01*
4120.8A	10000.	0.135	0.976E-01	0.325E-01*	0.285E-01*	0.279E-01*	0.241E-01*
c= 0.77E+18	20000.	0.137	0.862E-01	0.365E-01	0.329E-01	0.314E-01*	0.281E-01*
	30000.	0.142	0.731E-01	0.391E-01	0.357E-01	0.336E-01	0.304E-01
	40000.	0.146	0.638E-01	0.410E-01	0.376E-01	0.352E-01	0.322E-01
	80000.	0.148	0.460E-01	0.461E-01	0.428E-01	0.396E-01	0.366E-01
2P - 6S	5000.	0.274	0.203				
3867.5A	10000.	0.291	0.202	0.690E-01*	0.577E-01*		
c= 0.38E+18	20000.	0.285	0.158	0.775E-01*	0.680E-01*	0.666E-01*	0.576E-01*
	30000.	0.302	0.130	0.830E-01*	0.741E-01*	0.712E-01*	0.630E-01*
	40000.	0.310	0.110	0.871E-01*	0.785E-01*	0.747E-01*	0.669E-01*
	80000.	0.298	0.717E-01	0.979E-01*	0.898E-01*	0.839E-01*	0.767E-01*
2P - 8S	5000.	0.918	0.616				
3652.0A	10000.	0.934	0.584				
c= 0.14E+18	20000.	0.988	0.413				
	30000.	1.05	0.329				
	40000.	1.04	0.257				
	80000.	0.983	0.139				
2P -10S	5000.	2.59*	1.51*				
3562.9A	10000.	2.48	1.24				
c= 0.68E+17	20000.	2.68	0.834				
	30000.	2.75	0.638				
	40000.	2.70	0.485				
	80000.	2.57	0.236				
2P - 3D	5000.	0.280E-01	-0.760E-02	0.591E-02	-0.483E-02	0.525E-02	-0.413E-02
5875.7A	10000.	0.302E-01	-0.422E-02	0.650E-02	-0.550E-02	0.574E-02	-0.471E-02
c= 0.19E+19	20000.	0.301E-01	-0.114E-02	0.718E-02	-0.623E-02	0.631E-02	-0.534E-02
	30000.	0.300E-01	0.392E-03	0.763E-02	-0.669E-02	0.667E-02	-0.574E-02
	40000.	0.299E-01	0.832E-03	0.798E-02	-0.703E-02	0.696E-02	-0.603E-02
	80000.	0.296E-01	0.124E-02	0.896E-02	-0.791E-02	0.771E-02	-0.679E-02
2P - 4D	5000.	0.216	-0.110E-01				
4471.5A	10000.	0.198	-0.944E-02				
c= 0.14E+17	20000.	0.176	-0.416E-02				
	30000.	0.163	-0.255E-02	0.174*	0.187*		
	40000.	0.154	-0.131E-02	0.163*	0.201*		
	80000.	0.133	0.120E-02	0.117*	0.197*	0.172*	0.194*
2P - 5D	5000.	0.520	-0.349E-01				
4026.2A	10000.	0.485	-0.255E-01				
c= 0.68E+16	20000.	0.433	-0.158E-01				
	30000.	0.402	-0.910E-02				
	40000.	0.380	-0.547E-02				
	80000.	0.327	0.153E-02				
2P - 6D	5000.	0.995	-0.881E-01				
3819.6A	10000.	0.953	-0.660E-01				
c= 0.36E+16	20000.	0.865	-0.345E-01				
	30000.	0.807	-0.210E-01				
	40000.	0.765	-0.130E-01				
	80000.	0.660	-0.172E-02				
2P - 7D	5000.	1.67	-0.181				
3705.0A	10000.	1.65	-0.131				
c= 0.17E+16	20000.	1.52	-0.630E-01				
	30000.	1.43	-0.395E-01				
	40000.	1.36	-0.260E-01				
	80000.	1.18	-0.194E-02				

NE= 0.1E+16		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	2WE(A)	DE(A)	2WI(A)	DI(A)	2WI(A)	DI(A)
2P - 8D	5000.	2.58	-0.264				
3634.2A	10000.	2.63	-0.198				
c= 0.15E+16	20000.	2.48	-0.876E-01				
	30000.	2.35	-0.546E-01				
	40000.	2.25	-0.367E-01				
	80000.	1.96	-0.159E-03				
2P - 9D	5000.	3.69	-0.372				
3587.3A	10000.	3.91	-0.229				
c= 0.13E+16	20000.	3.77	-0.120				
	30000.	3.61	-0.770E-01				
	40000.	3.46	-0.549E-01				
	80000.	3.04	0.403E-03				
2P -10D	5000.	4.95	-0.526				
3554.4A	10000.	5.47	-0.399				
c= 0.55E+15	20000.	5.43	-0.180				
	30000.	5.23	-0.597E-01				
	40000.	5.04	-0.901E-01				
	80000.	4.47	-0.288E-02				
NE= 0.1E+17							
2S - 3P	5000.	0.627	-0.235	0.187*	-0.131*		
5015.7A	10000.	0.597	-0.176	0.210*	-0.164*	0.181*	-0.137*
c= 0.26E+18	20000.	0.568	-0.120	0.237*	-0.197*	0.202*	-0.166*
	30000.	0.549	-0.849E-01	0.255*	-0.216*	0.217*	-0.183*
	40000.	0.534	-0.713E-01	0.270*	-0.231*	0.228*	-0.196*
	80000.	0.492	-0.463E-01	0.310*	-0.269*	0.259*	-0.226*
2S - 4P	5000.	1.54	-0.462				
3964.7A	10000.	1.48	-0.321				
c= 0.73E+17	20000.	1.40	-0.205				
	30000.	1.34	-0.158				
	40000.	1.29	-0.127				
	80000.	1.16	-0.729E-01				
2S - 5P	5000.	3.07	-0.814				
3613.6A	10000.	3.10	-0.578				
c= 0.32E+17	20000.	3.00	-0.375				
	30000.	2.87	-0.260				
	40000.	2.77	-0.203				
	80000.	2.50	-0.496E-01				
2S - 6P	5000.	5.08	-1.07				
3447.6A	10000.	5.53	-0.853				
c= 0.17E+17	20000.	5.54	-0.575				
	30000.	5.37	-0.367				
	40000.	5.22	-0.282				
	80000.	4.75	-0.342E-01				
2S - 7P	5000.	7.25	-1.34				
3354.6A	10000.	8.75	-1.11				
c= 0.99E+16	20000.	9.17	-0.749				
	30000.	9.05	-0.486				
	40000.	8.87	-0.369				
	80000.	8.18	-0.306E-01				
2S - 8P	5000.	9.46*	-1.56*				
3296.8A	10000.	12.6	-1.33				
c= 0.70E+16	20000.	14.0	-1.08				
	30000.	14.1	-0.658				
	40000.	13.9	-0.481				

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 4S	5000.	1.04	0.725				
5047.7A	10000.	1.07	0.733	0.259*	0.202*		
c= 0.14E+19	20000.	1.10	0.651	0.290*	0.245*	0.249*	0.206*
	30000.	1.12	0.558	0.311*	0.270*	0.267*	0.228*
	40000.	1.14	0.504	0.326*	0.287*	0.280*	0.244*
	80000.	1.12	0.363	0.367*	0.331*	0.314*	0.283*
2P - 5S	5000.	2.28	1.50				
4437.6A	10000.	2.32	1.50				
c= 0.55E+18	20000.	2.36	1.23				
	30000.	2.42	1.02				
	40000.	2.43	0.897				
	80000.	2.33	0.595				
2P - 6S	5000.	4.80*	2.78*				
4169.0A	10000.	4.70	2.68				
c= 0.28E+18	20000.	4.82	2.10				
	30000.	5.01	1.78				
	40000.	4.96	1.53				
	80000.	4.62	0.909				
2P - 7S	5000.	8.86*	4.36*				
4024.0A	10000.	8.54	4.16				
c= 0.16E+18	20000.	9.00	3.27				
	30000.	9.28	2.81				
	40000.	9.07	2.26				
	80000.	8.45	1.26				
2P - 3D	5000.	0.739	0.260	0.232*	0.172*	0.199*	0.141*
6678.1A	10000.	0.693	0.224	0.261*	0.212*	0.224*	0.177*
c= 0.47E+18	20000.	0.628	0.184	0.296*	0.251*	0.251*	0.212*
	30000.	0.591	0.162	0.321*	0.274*	0.270*	0.233*
	40000.	0.565	0.139	0.340	0.293	0.284*	0.248*
	80000.	0.514	0.923E-01	0.387	0.342	0.325*	0.285*
2P - 4D	5000.	2.61	0.446				
4921.9A	10000.	2.49	0.376				
c= 0.12E+17	20000.	2.26	0.303				
	30000.	2.09	0.242				
	40000.	1.98	0.202				
	80000.	1.70	0.133				
2P - 5D	5000.	4.96	0.662				
4387.9A	10000.	5.10	0.552				
c= 0.61E+16	20000.	4.82	0.464				
	30000.	4.54	0.362				
	40000.	4.32	0.303				
	80000.	3.76	0.180				
2P - 6D	5000.	7.66	0.838				
4143.8A	10000.	8.64	0.704				
c= 0.26E+16	20000.	8.61	0.565				
	30000.	8.28	0.472				
	40000.	7.97	0.400				
	80000.	7.06	0.234				
2S - 3P	5000.	0.143	0.767E-01	0.396E-01	0.279E-01	0.356E-01*	0.233E-01*
3888.7A	10000.	0.166	0.618E-01	0.434E-01	0.332E-01	0.387E-01*	0.281E-01*
c= 0.81E+18	20000.	0.182	0.493E-01	0.476E-01	0.386E-01	0.422E-01	0.328E-01
	30000.	0.188	0.405E-01	0.504E-01	0.418E-01	0.445E-01	0.357E-01
	40000.	0.191	0.339E-01	0.526E-01	0.442E-01	0.462E-01	0.378E-01
	80000.	0.193	0.224E-01	0.585E-01	0.503E-01	0.510E-01	0.430E-01

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2S - 4P	5000.	0.439	0.206				
3187.7A	10000.	0.500	0.170				
c= 0.23E+18	20000.	0.526	0.129	0.142*	0.112*		
	30000.	0.533	0.914E-01	0.151*	0.124*		
	40000.	0.534	0.742E-01	0.159*	0.132*	0.138*	0.112*
	80000.	0.521	0.348E-01	0.178*	0.153*	0.153*	0.130*
2S - 5P	5000.	1.13	0.411				
2945.1A	10000.	1.27	0.363				
c= 0.10E+18	20000.	1.31	0.260				
	30000.	1.31	0.176				
	40000.	1.31	0.143				
	80000.	1.25	0.602E-01				
2S - 6P	5000.	2.36	0.635				
2829.1A	10000.	2.66	0.592				
c= 0.54E+17	20000.	2.75	0.434				
	30000.	2.76	0.303				
	40000.	2.74	0.240				
	80000.	2.59	0.113				
2P - 4S	5000.	0.585	0.428	0.127*	0.942E-01*	0.109*	0.772E-01*
4713.2A	10000.	0.616	0.455	0.143*	0.117*	0.123*	0.977E-01*
c= 0.20E+19	20000.	0.638	0.439	0.161*	0.139*	0.138*	0.117*
	30000.	0.642	0.389	0.172*	0.152*	0.148*	0.129*
	40000.	0.658	0.346	0.180*	0.161*	0.155*	0.137*
	80000.	0.684	0.278	0.203	0.185	0.174*	0.158*
2P - 5S	5000.	1.36	0.955				
4120.8A	10000.	1.35	0.931				
c= 0.77E+18	20000.	1.37	0.849				
	30000.	1.42	0.726				
	40000.	1.46	0.635				
	80000.	1.48	0.460	0.461*	0.410*		
2P - 6S	5000.	2.74	1.79				
3867.5A	10000.	2.91	1.86				
c= 0.38E+18	20000.	2.85	1.51				
	30000.	3.02	1.27				
	40000.	3.10	1.10				
	80000.	2.98	0.717				
2P - 8S	5000.	8.77*	4.36*				
3052.0A	10000.	9.08*	4.64*				
c= 0.14E+18	20000.	9.70	3.71				
	30000.	10.3	3.05				
	40000.	10.2	2.49				
	80000.	9.73	1.36				
2P - 3D	5000.	0.280	-0.726E-01	0.590E-01	-0.444E-01	0.524E-01	-0.374E-01
5875.7A	10000.	0.302	-0.407E-01	0.649E-01	-0.522E-01	0.574E-01	-0.443E-01
c= 0.19E+19	20000.	0.301	-0.112E-01	0.718E-01	-0.603E-01	0.630E-01	-0.514E-01
	30000.	0.300	0.413E-02	0.763E-01	-0.652E-01	0.667E-01	-0.557E-01
	40000.	0.299	0.850E-02	0.798E-01	-0.689E-01	0.695E-01	-0.589E-01
	80000.	0.296	0.125E-01	0.896E-01	-0.782E-01	0.771E-01	-0.669E-01
2P - 4D	5000.	1.63	-0.188				
4471.5A	10000.	1.61	-0.128				
c= 0.14E+17	20000.	1.49	-0.794E-01				
	30000.	1.41	-0.448E-01				
	40000.	1.35	-0.298E-01				
	80000.	1.20	0.779E-03				

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2P - 5D	5000.	3.48	-0.426				
4026.2A	10000.	3.63	-0.321				
c= 0.68E+16	20000.	3.47	-0.206				
	30000.	3.31	-0.131				
	40000.	3.19	-0.891E-01				
	80000.	2.84	-0.902E-02				
2P - 6D	5000.	5.91	-0.719				
3819.6A	10000.	6.64	-0.592				
c= 0.36E+16	20000.	6.60	-0.396				
	30000.	6.40	-0.251				
	40000.	6.20	-0.166				
	80000.	5.58	-0.172E-01				
2P - 7D	5000.	8.62	-0.978				
3705.0A	10000.	10.6	-0.855				
c= 0.17E+16	20000.	11.0	-0.617				
	30000.	10.9	-0.385				
	40000.	10.7	-0.251				
	80000.	9.73	-0.194E-01				

NE= 0.1E+18

2S - 3P	5000.	5.32	-1.58				
5015.7A	10000.	5.31	-1.26				
c= 0.26E+18	20000.	5.22	-0.950				
	30000.	5.12	-0.794				
	40000.	5.01	-0.665				
	80000.	4.69	-0.429				
2S - 4P	5000.	9.53	-2.22				
3964.7A	10000.	10.8	-1.81				
c= 0.73E+17	20000.	11.2	-1.69				
	30000.	11.1	-1.29				
	40000.	10.9	-1.01				
	80000.	10.2	-0.547				
2P - 4S	5000.	10.3	5.88				
5047.7A	10000.	10.7	6.36				
c= 0.14E+19	20000.	10.9	5.83				
	30000.	11.2	5.13				
	40000.	11.3	4.80				
	80000.	11.2	3.59				
2P - 3D	5000.	6.44	1.78				
6678.1A	10000.	6.24	1.65				
c= 0.47E+18	20000.	5.80	1.48				
	30000.	5.51	1.43				
	40000.	5.30	1.25				
	80000.	4.89	0.923				
2S - 3P	5000.	1.42	0.652				
3888.7A	10000.	1.66	0.557				
c= 0.81E+18	20000.	1.82	0.470	0.475*	0.337*		
	30000.	1.87	0.400	0.503*	0.379*		
	40000.	1.91	0.335	0.525*	0.408*	0.461*	0.343*
	80000.	1.93	0.224	0.585*	0.478*	0.509*	0.406*
2S - 4P	5000.	4.06	1.34				
3187.7A	10000.	4.76	1.18				
c= 0.23E+18	20000.	5.09	1.11				
	30000.	5.19	0.781				

NE= 0.1E+18

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2S - 5P	5000.	7.91	1.55				
2945.1A	10000.	10.4	1.82				
c= 0.10E+18	20000.	11.4	1.49				
	30000.	11.8	1.15				
	40000.	11.9	1.01				
	80000.	11.7	0.531				
2P - 4S	5000.	5.85	3.70				
4713.2A	10000.	6.16	4.13				
c= 0.20E+19	20000.	6.38	4.09				
	30000.	6.42	3.70				
	40000.	6.57	3.36				
	80000.	6.84	2.76				
2P - 3D	5000.	2.79	-0.591	0.578	-0.321	0.506	-0.250
5875.7A	10000.	3.01	-0.312	0.646	-0.435	0.568	-0.356
c= 0.19E+19	20000.	3.00	-0.621E-01	0.717	-0.541	0.628	-0.452
	30000.	3.00	0.636E-01	0.762	-0.602	0.666	-0.507
	40000.	2.99	0.102	0.797	-0.645	0.695	-0.545
	80000.	2.96	0.129	0.894	-0.751	0.771	-0.638
2P - 4D	5000.	9.88	-1.35				
4471.5A	10000.	11.4	-0.871				
c= 0.14E+17	20000.	11.6	-0.585				
	30000.	11.4	-0.384				
	40000.	11.2	-0.248				
	80000.	10.4	-0.185E-01				

Table 3. The same as in Table 1 but for infrared He I lines with λ >7000 Å, for temperatures from 2500 to 80000 K.

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
2S - 2P	2500.	0.717E-02	-0.399E-02	0.159E-02	-0.109E-02	0.148E-02	-0.938E-03
20581.3A	5000.	0.750E-02	-0.475E-02	0.169E-02	-0.123E-02	0.156E-02	-0.106E-02
c= 0.21E+21	10000.	0.798E-02	-0.457E-02	0.182E-02	-0.138E-02	0.166E-02	-0.119E-02
	20000.	0.876E-02	-0.427E-02	0.196E-02	-0.155E-02	0.177E-02	-0.134E-02
	40000.	0.100E-01	-0.313E-02	0.213E-02	-0.175E-02	0.191E-02	-0.150E-02
	80000.	0.113E-01	-0.251E-02	0.233E-02	-0.196E-02	0.208E-02	-0.168E-02
2P - 3S	2500.	0.491E-02	0.360E-02	0.107E-02	0.986E-03	0.924E-03	0.844E-03
7281.4A	5000.	0.556E-02	0.413E-02	0.120E-02	0.112E-02	0.103E-02	0.957E-03
c= 0.71E+19	10000.	0.589E-02	0.429E-02	0.135E-02	0.126E-02	0.116E-02	0.108E-02
	20000.	0.617E-02	0.398E-02	0.151E-02	0.142E-02	0.130E-02	0.122E-02
	40000.	0.640E-02	0.314E-02	0.170E-02	0.159E-02	0.146E-02	0.137E-02
	80000.	0.660E-02	0.258E-02	0.190E-02	0.179E-02	0.164E-02	0.154E-02
3S - 3P	2500.	1.82	-0.957	0.405	-0.360	0.351	-0.307
74351.0A	5000.	1.87	-0.931	0.454	-0.411	0.391	-0.351
c= 0.58E+20	10000.	1.83	-0.803	0.509	-0.466	0.438	-0.399
	20000.	1.76	-0.651	0.573	-0.527	0.491	-0.452
	40000.	1.71	-0.480	0.652	-0.593	0.552	-0.509
	80000.	1.63	-0.360	0.746	-0.674	0.625	-0.573
3S - 4P	2500.	0.265	-0.130	0.684E-01	-0.585E-01	0.590E-01	-0.495E-01
15083.7A	5000.	0.260	-0.108	0.766E-01	-0.679E-01	0.660E-01	-0.578E-01
c= 0.11E+19	10000.	0.247	-0.816E-01	0.861E-01	-0.777E-01	0.739E-01	-0.664E-01
	20000.	0.232	-0.538E-01	0.974E-01	-0.884E-01	0.830E-01	-0.757E-01
	40000.	0.215	-0.325E-01	0.111	-0.100	0.937E-01	-0.858E-01
	80000.	0.195	-0.215E-01	0.128	-0.115	0.107	-0.969E-01
3S - 5P	2500.	0.393	-0.180	0.108*	-0.862E-01*	0.926E-01*	-0.720E-01*
11013.1A	5000.	0.378	-0.138	0.121*	-0.103*	0.104*	-0.869E-01*
c= 0.30E+18	10000.	0.355	-0.870E-01	0.136*	-0.120*	0.116*	-0.102*
	20000.	0.330	-0.431E-01	0.154*	-0.137*	0.131*	-0.117*
	40000.	0.298	-0.270E-01	0.177	-0.157	0.148*	-0.134*
	80000.	0.264	-0.112E-01	0.202	-0.182	0.169	-0.152
3S - 6P	2500.	0.695	-0.250				
9603.4A	5000.	0.660	-0.192				
c= 0.13E+18	10000.	0.617	-0.906E-01				
	20000.	0.566	-0.585E-01	0.287*	-0.250*		
	40000.	0.504	-0.161E-01	0.330*	-0.289*	0.275*	-0.245*
	80000.	0.441	-0.584E-02	0.374*	-0.337*	0.316*	-0.280*
3P - 4S	2500.	0.272	0.161	0.520E-01	0.463E-01	0.448E-01	0.394E-01
21132.0A	5000.	0.288	0.172	0.583E-01	0.530E-01	0.502E-01	0.453E-01
c= 0.47E+19	10000.	0.289	0.163	0.654E-01	0.603E-01	0.563E-01	0.516E-01
	20000.	0.285	0.135	0.735E-01	0.683E-01	0.631E-01	0.585E-01
	40000.	0.284	0.100	0.829E-01	0.769E-01	0.709E-01	0.660E-01
	80000.	0.273	0.734E-01	0.940E-01	0.868E-01	0.798E-01	0.743E-01
3P - 5S	2500.	0.239	0.158	0.461E-01	0.402E-01	0.397E-01	0.341E-01
13411.8A	5000.	0.251	0.167	0.518E-01	0.466E-01	0.445E-01	0.397E-01
c= 0.19E+19	10000.	0.254	0.153	0.581E-01	0.533E-01	0.499E-01	0.455E-01
	20000.	0.254	0.121	0.653E-01	0.605E-01	0.560E-01	0.518E-01
	40000.	0.257	0.830E-01	0.733E-01	0.685E-01	0.629E-01	0.587E-01
	80000.	0.245	0.501E-01	0.826E-01	0.771E-01	0.707E-01	0.662E-01

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3P - 6S	2500.	0.354	0.241	0.717E-01*	0.600E-01*	0.616E-01*	0.504E-01*
11225.9A	5000.	0.366	0.252	0.805E-01*	0.706E-01*	0.692E-01*	0.599E-01*
c= 0.13E+19	10000.	0.374	0.229	0.904E-01	0.816E-01	0.776E-01*	0.696E-01*
	20000.	0.378	0.167	0.102	0.933E-01	0.872E-01	0.797E-01
	40000.	0.381	0.108	0.114	0.106	0.979E-01	0.907E-01
	80000.	0.357	0.515E-01	0.128	0.120	0.110	0.103
3P - 4D	2500.	0.735	0.212	0.338*	0.266*	0.285*	0.222*
19089.4A	5000.	0.669	0.167	0.388*	0.321*	0.324*	0.269*
c= 0.18E+18	10000.	0.587	0.104	0.436*	0.384*	0.372*	0.317*
	20000.	0.504	0.709E-01	0.455*	0.454*	0.423*	0.373*
	40000.	0.427	0.371E-01	0.423	0.510	0.454*	0.439*
	80000.	0.359	0.232E-01	0.360	0.529	0.438	0.500
3P - 5D	2500.	0.951	0.233				
12968.4A	5000.	0.864	0.168				
c= 0.54E+17	10000.	0.758	0.121				
	20000.	0.649	0.676E-01				
	40000.	0.545	0.418E-01	0.636*	0.725*		
	80000.	0.452	0.191E-01	0.539*	0.770*	0.655*	0.711*
3P - 6D	2500.	1.53	0.289				
11045.0A	5000.	1.40	0.208				
c= 0.18E+17	10000.	1.23	0.122				
	20000.	1.05	0.802E-01				
	40000.	0.883	0.510E-01				
	80000.	0.729	0.206E-01				
3D - 4P	2500.	0.967	-0.701E-01				
18555.6A	5000.	0.826	-0.607E-01				
c= 0.15E+17	10000.	0.694	-0.439E-01				
	20000.	0.580	-0.323E-01	0.599*	-1.75*		
	40000.	0.482	-0.211E-01	0.362	-1.42	0.730*	-1.98*
	80000.	0.400	-0.123E-01	0.186	-1.14	0.420	-1.61
3D - 5P	2500.	0.545	-0.241	0.145*	-0.116*	0.125*	-0.971E-01*
12755.7A	5000.	0.522	-0.186	0.163*	-0.139*	0.140*	-0.117*
c= 0.40E+18	10000.	0.487	-0.117	0.183*	-0.162*	0.157*	-0.137*
	20000.	0.448	-0.706E-01	0.208*	-0.185*	0.176*	-0.158*
	40000.	0.400	-0.356E-01	0.238	-0.212	0.199*	-0.180*
	80000.	0.352	-0.139E-01	0.272	-0.245	0.228	-0.205
3D - 4F	2500.	0.393	-0.535E-01	0.227*	-0.183*	0.191*	-0.153*
18696.9A	5000.	0.341	-0.273E-01	0.261*	-0.219*	0.218*	-0.183*
c= 0.19E+18	10000.	0.289	-0.134E-01	0.290	-0.263	0.251*	-0.215*
	20000.	0.242	0.219E-02	0.287	-0.310	0.283*	-0.253*
	40000.	0.205	0.459E-02	0.238	-0.339	0.293	-0.299
	80000.	0.176	0.869E-02	0.167	-0.333	0.258	-0.336
3D - 5F	2500.	0.880	-0.339E-01				
12790.3A	5000.	0.767	-0.174E-01				
c= 0.12E+17	10000.	0.646	0.113E-02	0.367*	0.340*		
	20000.	0.533	0.476E-02	0.359*	0.164*		
	40000.	0.437	0.965E-02	0.276	0.392E-01	0.362*	0.239*
	80000.	0.357	0.950E-02	0.165	-0.648E-01	0.320*	0.920E-01*
2S - 2P	2500.	0.106E-02	-0.502E-03	0.301E-03	-0.141E-03	0.294E-03	-0.121E-03
10830.0A	5000.	0.107E-02	-0.605E-03	0.309E-03	-0.159E-03	0.299E-03	-0.137E-03
c= 0.11E+21	10000.	0.114E-02	-0.632E-03	0.320E-03	-0.179E-03	0.307E-03	-0.154E-03
	20000.	0.131E-02	-0.622E-03	0.333E-03	-0.201E-03	0.316E-03	-0.172E-03
	40000.	0.156E-02	-0.475E-03	0.349E-03	-0.225E-03	0.328E-03	-0.194E-03
	80000.	0.188E-02	-0.383E-03	0.368E-03	-0.253E-03	0.343E-03	-0.217E-03

NE= 0.1E+15

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONISED HELIUM 2WI(A)	DI(A)
2P - 3S	2500.	0.266E-02	0.198E-02	0.610E-03	0.560E-03	0.527E-03	0.480E-03
7065.3A	5000.	0.312E-02	0.235E-02	0.683E-03	0.633E-03	0.589E-03	0.543E-03
c= 0.12E+20	10000.	0.342E-02	0.264E-02	0.765E-03	0.713E-03	0.659E-03	0.612E-03
	20000.	0.360E-02	0.249E-02	0.857E-03	0.802E-03	0.738E-03	0.688E-03
	40000.	0.375E-02	0.216E-02	0.961E-03	0.902E-03	0.827E-03	0.774E-03
	80000.	0.404E-02	0.173E-02	0.108E-02	0.101E-02	0.927E-03	0.870E-03
3S - 4P	2500.	0.622E-01	0.382E-01	0.159E-01	0.129E-01	0.142E-01	0.110E-01
12528.0A	5000.	0.704E-01	0.266E-01	0.175E-01	0.147E-01	0.155E-01	0.126E-01
c= 0.36E+19	10000.	0.819E-01	0.184E-01	0.193E-01	0.167E-01	0.170E-01	0.143E-01
	20000.	0.875E-01	0.103E-01	0.214E-01	0.189E-01	0.187E-01	0.162E-01
	40000.	0.908E-01	0.368E-02	0.238E-01	0.212E-01	0.207E-01	0.182E-01
	80000.	0.899E-01	-0.314E-03	0.267E-01	0.239E-01	0.230E-01	0.205E-01
3S - 5P	2500.	0.106	0.645E-01	0.274E-01	0.221E-01	0.242E-01	0.187E-01
9463.6A	5000.	0.119	0.438E-01	0.304E-01	0.256E-01	0.266E-01	0.218E-01
c= 0.10E+19	10000.	0.134	0.325E-01	0.337E-01	0.293E-01	0.294E-01	0.251E-01
	20000.	0.139	0.140E-01	0.375E-01	0.334E-01	0.326E-01	0.286E-01
	40000.	0.140	0.563E-02	0.420E-01	0.378E-01	0.363E-01	0.324E-01
	80000.	0.135	0.127E-02	0.473E-01	0.426E-01	0.405E-01	0.365E-01
3S - 6P	2500.	0.198	0.118	0.512E-01*	0.399E-01*	0.448E-01*	0.335E-01*
8361.8A	5000.	0.224	0.886E-01	0.569E-01*	0.472E-01*	0.496E-01*	0.400E-01*
c= 0.47E+18	10000.	0.246	0.538E-01	0.633E-01*	0.548E-01*	0.551E-01*	0.466E-01*
	20000.	0.251	0.357E-01	0.707E-01	0.627E-01	0.612E-01*	0.536E-01*
	40000.	0.249	0.113E-01	0.793E-01	0.712E-01	0.683E-01	0.610E-01
	80000.	0.235	0.811E-02	0.897E-01	0.807E-01	0.765E-01	0.691E-01
3P - 4S	2500.	0.111	0.632E-01	0.197E-01	0.173E-01	0.172E-01	0.147E-01
21120.0A	5000.	0.137	0.742E-01	0.219E-01	0.196E-01	0.191E-01	0.168E-01
c= 0.24E+20	10000.	0.155	0.796E-01	0.244E-01	0.222E-01	0.212E-01	0.190E-01
	20000.	0.170	0.768E-01	0.273E-01	0.250E-01	0.236E-01	0.215E-01
	40000.	0.179	0.625E-01	0.305E-01	0.281E-01	0.263E-01	0.242E-01
	80000.	0.186	0.509E-01	0.341E-01	0.316E-01	0.294E-01	0.272E-01
3P - 5S	2500.	0.120	0.832E-01	0.244E-01	0.216E-01	0.210E-01	0.184E-01
12846.0A	5000.	0.135	0.953E-01	0.273E-01	0.248E-01	0.235E-01	0.212E-01
c= 0.75E+19	10000.	0.143	0.942E-01	0.307E-01	0.283E-01	0.264E-01	0.242E-01
	20000.	0.149	0.796E-01	0.344E-01	0.321E-01	0.296E-01	0.275E-01
	40000.	0.159	0.585E-01	0.386E-01	0.361E-01	0.332E-01	0.310E-01
	80000.	0.161	0.423E-01	0.434E-01	0.407E-01	0.372E-01	0.349E-01
3P - 6S	2500.	0.198	0.141	0.413E-01	0.355E-01	0.355E-01*	0.300E-01*
10667.6A	5000.	0.213	0.157	0.464E-01	0.414E-01	0.399E-01	0.352E-01
c= 0.29E+19	10000.	0.228	0.152	0.521E-01	0.475E-01	0.448E-01	0.405E-01
	20000.	0.228	0.116	0.585E-01	0.541E-01	0.502E-01	0.463E-01
	40000.	0.243	0.769E-01	0.657E-01	0.613E-01	0.564E-01	0.525E-01
	80000.	0.239	0.447E-01	0.739E-01	0.691E-01	0.633E-01	0.593E-01
3P - 7S	2500.	0.362	0.250	0.720E-01*	0.590E-01*	0.619E-01*	0.494E-01*
9702.7A	5000.	0.354	0.264	0.809E-01*	0.701E-01*	0.695E-01*	0.593E-01*
c= 0.15E+19	10000.	0.368	0.245	0.908E-01*	0.814E-01*	0.780E-01*	0.692E-01*
	20000.	0.382	0.174	0.102	0.932E-01	0.875E-01*	0.796E-01*
	40000.	0.409	0.114	0.115	0.106	0.983E-01	0.908E-01
	80000.	0.389	0.511E-01	0.129	0.120	0.110	0.103
3P - 4D	2500.	0.413	-0.229E-02	0.190*	0.154*	0.161*	0.129*
17002.0A	5000.	0.373	-0.981E-02	0.219*	0.183*	0.182*	0.154*
c= 0.20E+18	10000.	0.339	-0.108E-01	0.249	0.217	0.209*	0.180*
	20000.	0.301	-0.139E-01	0.263	0.259	0.240*	0.210*
	40000.	0.264	-0.108E-01	0.238	0.305	0.263	0.249
	80000.	0.230	-0.159E-02	0.168	0.291	0.247	0.288

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
NE= 0.1E+15							
3P - 5D	2500.	0.632	-0.539E-03				
11969.1A	5000.	0.573	-0.994E-02				
c= 0.60E+17	10000.	0.513	-0.211E-01				
	20000.	0.448	-0.107E-01	0.441*	0.404*		
	40000.	0.386	-0.299E-02	0.405*	0.478*	0.436*	0.397*
	80000.	0.328	-0.675E-04	0.298	0.393	0.424*	0.469*
3P - 6D	2500.	1.05	-0.737E-01				
10311.0A	5000.	0.968	-0.261E-01				
c= 0.26E+17	10000.	0.870	-0.461E-01				
	20000.	0.758	-0.159E-01				
	40000.	0.651	-0.122E-01				
	80000.	0.550	0.605E-03	0.634*	0.939*		
3D - 4P	2500.	0.177	0.109	0.402E-01	0.334E-01	0.355E-01	0.285E-01
19543.0A	5000.	0.188	0.939E-01	0.445E-01	0.382E-01	0.390E-01	0.327E-01
c= 0.87E+19	10000.	0.211	0.698E-01	0.493E-01	0.434E-01	0.431E-01	0.372E-01
	20000.	0.222	0.488E-01	0.548E-01	0.491E-01	0.477E-01	0.421E-01
	40000.	0.223	0.255E-01	0.612E-01	0.553E-01	0.530E-01	0.475E-01
	80000.	0.218	0.130E-01	0.688E-01	0.622E-01	0.591E-01	0.534E-01
3D - 5P	2500.	0.211	0.137	0.519E-01	0.421E-01	0.456E-01	0.356E-01
12985.0A	5000.	0.232	0.106	0.575E-01	0.488E-01	0.503E-01	0.416E-01
c= 0.20E+19	10000.	0.258	0.850E-01	0.639E-01	0.559E-01	0.557E-01	0.478E-01
	20000.	0.266	0.533E-01	0.712E-01	0.636E-01	0.618E-01	0.544E-01
	40000.	0.265	0.310E-01	0.797E-01	0.721E-01	0.688E-01	0.617E-01
	80000.	0.253	0.117E-01	0.899E-01	0.812E-01	0.769E-01	0.696E-01
3D - 6P	2500.	0.349	0.209	0.887E-01*	0.692E-01*	0.776E-01*	0.580E-01*
10996.6A	5000.	0.393	0.160	0.985E-01*	0.820E-01*	0.859E-01*	0.694E-01*
c= 0.81E+18	10000.	0.430	0.127	0.110*	0.950E-01*	0.953E-01*	0.809E-01*
	20000.	0.437	0.780E-01	0.123	0.109	0.106*	0.929E-01*
	40000.	0.431	0.443E-01	0.137	0.124	0.118	0.106
	80000.	0.406	0.176E-01	0.156	0.140	0.133	0.120
3D - 4F	2500.	0.352	-0.243E-01	0.187*	-0.154*	0.158*	-0.129*
18686.0A	5000.	0.307	-0.296E-02	0.216*	-0.182*	0.180*	-0.153*
c= 0.24E+18	10000.	0.261	0.552E-02	0.244	-0.216	0.207*	-0.179*
	20000.	0.220	0.157E-01	0.252	-0.261	0.236	-0.209
	40000.	0.188	0.136E-01	0.225	-0.298	0.254	-0.247
	80000.	0.164	0.142E-01	0.148	-0.285	0.232	-0.284
3D - 5F	2500.	0.165	-0.114E-01	0.877E-01*	-0.720E-01*	0.741E-01*	-0.606E-01*
12785.0A	5000.	0.144	-0.138E-02	0.101*	-0.854E-01*	0.841E-01*	-0.718E-01*
c= 0.11E+18	10000.	0.122	0.259E-02	0.114	-0.101	0.967E-01*	-0.838E-01*
	20000.	0.103	0.733E-02	0.118	-0.122	0.111	-0.977E-01
	40000.	0.881E-01	0.635E-02	0.105	-0.139	0.119	-0.116
	80000.	0.767E-01	0.664E-02	0.693E-01	-0.134	0.108	-0.133
NE= 0.1E+16							
2S - 2P	2500.	0.717E-01	-0.397E-01	0.159E-01	-0.107E-01	0.148E-01	-0.918E-02
20581.3A	5000.	0.750E-01	-0.474E-01	0.169E-01	-0.122E-01	0.156E-01	-0.104E-01
c= 0.21E+21	10000.	0.798E-01	-0.457E-01	0.182E-01	-0.138E-01	0.166E-01	-0.118E-01
	20000.	0.876E-01	-0.427E-01	0.196E-01	-0.155E-01	0.177E-01	-0.133E-01
	40000.	0.100	-0.313E-01	0.213E-01	-0.174E-01	0.191E-01	-0.150E-01
	80000.	0.113	-0.251E-01	0.233E-01	-0.196E-01	0.208E-01	-0.168E-01
2P - 3S	2500.	0.491E-01	0.356E-01	0.107E-01	0.938E-02	0.923E-02*	0.796E-02*
7281.4A	5000.	0.556E-01	0.410E-01	0.120E-01	0.108E-01	0.103E-01*	0.923E-02*
c= 0.71E+19	10000.	0.589E-01	0.428E-01	0.135E-01	0.123E-01	0.116E-01*	0.106E-01*
	20000.	0.617E-01	0.398E-01	0.151E-01	0.140E-01	0.130E-01	0.120E-01
	40000.	0.640E-01	0.314E-01	0.170E-01	0.158E-01	0.146E-01	0.136E-01
	80000.	0.660E-01	0.258E-01	0.190E-01	0.178E-01	0.164E-01	0.153E-01

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3S - 3P	2500.	18.2	-9.25	4.05	-3.27	3.50	-2.74
74351.0A	5000.	18.7	-9.28	4.53	-3.87	3.91	-3.28
c= 0.58E+20	10000.	18.3	-7.95	5.09	-4.49	4.38	-3.82
	20000.	17.6	-6.50	5.73	-5.14	4.90	-4.39
	40000.	17.1	-4.79	6.52	-5.85	5.51	-5.00
	80000.	16.3	-3.60	7.46	-6.70	6.25	-5.67
3S - 4P	2500.	2.64	-1.19				
15083.7A	5000.	2.59	-1.04	0.766*	-0.596*		
c= 0.11E+19	10000.	2.47	-0.809	0.861*	-0.719*	0.739*	-0.606*
	20000.	2.32	-0.533	0.974*	-0.843*	0.830*	-0.715*
	40000.	2.15	-0.322	1.11*	-0.972*	0.936*	-0.828*
	80000.	1.94	-0.215	1.28*	-1.13*	1.07*	-0.947*
3S - 5P	2500.	3.80	-1.47				
11013.1A	5000.	3.69	-1.23				
c= 0.30E+18	10000.	3.49	-0.817				
	20000.	3.25	-0.425				
	40000.	2.95	-0.270				
	80000.	2.62	-0.112				
3S - 6P	2500.	6.19	-1.98				
9603.4A	5000.	6.06	-1.55				
c= 0.13E+18	10000.	5.80	-0.842				
	20000.	5.39	-0.541				
	40000.	4.85	-0.161				
	80000.	4.28	-0.584E-01				
3P - 4S	2500.	2.72	1.56	0.520*	0.407*	0.448*	0.339*
21132.0A	5000.	2.88	1.69	0.583	0.491	0.502*	0.414*
c= 0.47E+19	10000.	2.89	1.62	0.654	0.575	0.562*	0.488*
	20000.	2.85	1.35	0.735	0.662	0.631	0.565
	40000.	2.84	1.00	0.829	0.755	0.708	0.646
	80000.	2.73	0.734	0.940	0.859	0.798	0.734
3P - 5S	2500.	2.39	1.51	0.461*	0.328*		
13411.8A	5000.	2.51	1.63	0.517*	0.413*	0.445*	0.344*
c= 0.19E+19	10000.	2.54	1.51	0.581*	0.496*	0.499*	0.418*
	20000.	2.54	1.21	0.652*	0.579*	0.560*	0.492*
	40000.	2.57	0.828	0.733*	0.665*	0.629*	0.568*
	80000.	2.45	0.501	0.826	0.758	0.707*	0.649*
3P - 6S	2500.	3.54	2.24				
11225.9A	5000.	3.66	2.41				
c= 0.13E+19	10000.	3.74	2.25				
	20000.	3.78	1.66				
	40000.	3.81	1.07	1.14*	1.02*		
	80000.	3.57	0.515	1.28*	1.17*	1.10*	0.995*
3P - 4D	2500.	6.41	1.62				
19089.4A	5000.	6.02	1.34				
c= 0.18E+18	10000.	5.40	0.970				
	20000.	4.71	0.662				
	40000.	4.04	0.371				
	80000.	3.43	0.232	3.60*	5.11*		
3P - 5D	2500.	7.43	1.50				
12968.4A	5000.	7.17	1.26				
c= 0.54E+17	10000.	6.54	0.919				
	20000.	5.75	0.584				
	40000.	4.92	0.362				
	80000.	4.15	0.191				

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3P - 6D	2500.	10.3	1.66				
11045.0A	5000.	10.5	1.39				
c= 0.18E+17	10000.	9.85	1.01				
	20000.	8.79	0.655				
	40000.	7.60	0.407				
	80000.	6.42	0.206				
3D - 4P	2500.	6.82	-0.601				
18555.6A	5000.	6.25	-0.548				
c= 0.15E+17	10000.	5.51	-0.410				
	20000.	4.80	-0.320				
	40000.	4.11	-0.211	3.60*	-9.67*		
	80000.	3.50	-0.123	1.86*	-8.15*		
3D - 5P	2500.	5.28	-1.97				
12755.7A	5000.	5.10	-1.66				
c= 0.40E+18	10000.	4.79	-1.14				
	20000.	4.42	-0.689				
	40000.	3.96	-0.347				
	80000.	3.49	-0.139				
3D - 4F	2500.	3.33	-0.276				
18696.9A	5000.	2.99	-0.132				
c= 0.19E+18	10000.	2.59	-0.346E-01				
	20000.	2.21	0.480E-01				
	40000.	1.90	0.584E-01	2.38*	-3.26*		
	80000.	1.65	0.869E-01	1.67	-3.23	2.58*	-3.27*
3D - 5F	2500.	5.95	-0.747E-01				
12790.3A	5000.	5.65	0.833E-02				
c= 0.12E+17	10000.	5.03	0.643E-01				
	20000.	4.32	0.851E-01				
	40000.	3.66	0.965E-01				
	80000.	3.07	0.950E-01	1.65*	-1.27*		
2S - 2P	2500.	0.106E-01	-0.501E-02	0.301E-02	-0.140E-02	0.294E-02	-0.120E-02
10830.0A	5000.	0.107E-01	-0.605E-02	0.309E-02	-0.158E-02	0.299E-02	-0.136E-02
c= 0.11E+21	10000.	0.114E-01	-0.632E-02	0.320E-02	-0.178E-02	0.307E-02	-0.153E-02
	20000.	0.131E-01	-0.622E-02	0.333E-02	-0.200E-02	0.316E-02	-0.172E-02
	40000.	0.156E-01	-0.475E-02	0.349E-02	-0.225E-02	0.328E-02	-0.193E-02
	80000.	0.188E-01	-0.383E-02	0.368E-02	-0.253E-02	0.343E-02	-0.217E-02
2P - 3S	2500.	0.266E-01	0.196E-01	0.610E-02	0.539E-02	0.527E-02	0.459E-02
7065.3A	5000.	0.312E-01	0.234E-01	0.683E-02	0.618E-02	0.589E-02	0.528E-02
c= 0.12E+20	10000.	0.342E-01	0.263E-01	0.765E-02	0.702E-02	0.659E-02	0.601E-02
	20000.	0.360E-01	0.249E-01	0.857E-02	0.796E-02	0.738E-02	0.682E-02
	40000.	0.375E-01	0.216E-01	0.961E-02	0.897E-02	0.827E-02	0.769E-02
	80000.	0.404E-01	0.173E-01	0.108E-01	0.101E-01	0.927E-02	0.866E-02
3S - 4P	2500.	0.622	0.371	0.159*	0.115*	0.141*	0.960E-01*
12528.0A	5000.	0.704	0.261	0.175	0.137	0.155*	0.116*
c= 0.36E+19	10000.	0.819	0.183	0.193	0.160	0.170	0.136
	20000.	0.875	0.102	0.214	0.184	0.187	0.157
	40000.	0.908	0.365E-01	0.238	0.209	0.207	0.179
	80000.	0.899	-0.314E-02	0.267	0.237	0.230	0.203
3S - 5P	2500.	1.06	0.609				
9463.6A	5000.	1.19	0.424	0.303*	0.226*		
c= 0.10E+19	10000.	1.34	0.317	0.337*	0.272*	0.294*	0.229*
	20000.	1.39	0.139	0.375*	0.318*	0.326*	0.270*
	40000.	1.40	0.563E-01	0.419*	0.367*	0.362*	0.313*
	80000.	1.35	0.127E-01	0.473*	0.418*	0.405*	0.358*

NE= 0.1E+16

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3S - 6P	2500.	1.98	1.05				
8361.8A	5000.	2.24	0.819				
c= 0.47E+18	10000.	2.46	0.515				
	20000.	2.51	0.356				
	40000.	2.49	0.113				
	80000.	2.35	0.811E-01	0.898*	0.783*		
3P - 4S	2500.	1.11	0.619	0.197	0.160	0.172	0.135
21120.0A	5000.	1.37	0.734	0.219	0.187	0.191	0.159
c= 0.24E+20	10000.	1.55	0.793	0.244	0.216	0.212	0.184
	20000.	1.70	0.768	0.273	0.246	0.236	0.210
	40000.	1.79	0.625	0.305	0.279	0.263	0.239
	80000.	1.86	0.509	0.341	0.315	0.294	0.270
3P - 5S	2500.	1.20	0.804	0.243*	0.187*	0.209*	0.154*
12846.0A	5000.	1.35	0.938	0.273*	0.227*	0.235*	0.191*
c= 0.75E+19	10000.	1.43	0.940	0.306	0.268	0.263*	0.227*
	20000.	1.49	0.795	0.344	0.310	0.296*	0.264*
	40000.	1.59	0.584	0.386	0.354	0.332	0.303
	80000.	1.61	0.423	0.434	0.402	0.372	0.344
3P - 6S	2500.	1.98	1.33				
10667.6A	5000.	2.13	1.52				
c= 0.29E+19	10000.	2.28	1.51	0.521*	0.436*		
	20000.	2.28	1.16	0.585*	0.513*		
	40000.	2.43	0.767	0.657	0.592	0.564*	0.505*
	80000.	2.39	0.447	0.738	0.677	0.633*	0.579*
3P - 7S	2500.	3.62	2.30				
9702.7A	5000.	3.54	2.53				
c= 0.15E+19	10000.	3.68	2.40				
	20000.	3.82	1.73				
	40000.	4.09	1.14				
	80000.	3.89	0.511	1.29*	1.16*		
3P - 4D	2500.	3.58	-0.303				
17002.0A	5000.	3.34	-0.286				
c= 0.20E+18	10000.	3.11	-0.207				
	20000.	2.82	-0.158				
	40000.	2.50	-0.108	2.38*	2.93*		
	80000.	2.20	-0.159E-01	1.68*	2.82*	2.46*	2.79*
3P - 5D	2500.	4.85	-0.455				
11969.1A	5000.	4.69	-0.365				
c= 0.60E+17	10000.	4.40	-0.297				
	20000.	3.96	-0.168				
	40000.	3.49	-0.620E-01				
	80000.	3.02	-0.675E-01				
3P - 6D	2500.	7.17	-1.02				
10311.0A	5000.	7.31	-0.689				
c= 0.26E+17	10000.	7.02	-0.575				
	20000.	6.40	-0.273				
	40000.	5.67	-0.122				
	80000.	4.91	0.605E-01				
3D - 4P	2500.	1.77	1.06	0.402*	0.298*	0.354*	0.248*
19543.0A	5000.	1.88	0.923	0.444	0.356	0.390*	0.301*
c= 0.87E+19	10000.	2.11	0.693	0.493	0.416	0.431	0.353
	20000.	2.22	0.488	0.548	0.478	0.477	0.408
	40000.	2.23	0.255	0.612	0.544	0.530	0.465
	80000.	2.18	0.130	0.688	0.617	0.591	0.528

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
NE= 0.1E+16							
3D - 5P	2500.	2.11	1.29				
12985.0A	5000.	2.32	1.03	0.574*	0.430*		
c= 0.20E+19	10000.	2.58	0.841	0.639*	0.518*	0.556*	0.437*
	20000.	2.66	0.529	0.712*	0.607*	0.618*	0.515*
	40000.	2.65	0.309	0.797*	0.699*	0.688*	0.596*
	80000.	2.53	0.117	0.899*	0.797*	0.769*	0.682*
3D - 6P	2500.	3.48	1.86				
10996.6A	5000.	3.93	1.50				
c= 0.81E+18	10000.	4.30	1.24				
	20000.	4.37	0.770				
	40000.	4.31	0.438				
	80000.	4.06	0.176	1.56*	1.36*		
3D - 4F	2500.	3.04	0.168E-02				
18686.0A	5000.	2.73	0.988E-01				
c= 0.24E+18	10000.	2.37	0.146				
	20000.	2.03	0.178	2.52*	-2.46*		
	40000.	1.76	0.147	2.25*	-2.87*		
	80000.	1.55	0.142	1.48	-2.78	2.32*	-2.77*
3D - 5F	2500.	1.42	0.789E-03				
12785.0A	5000.	1.28	0.463E-01				
c= 0.11E+18	10000.	1.11	0.683E-01				
	20000.	0.952	0.835E-01	1.18*	-1.15*		
	40000.	0.825	0.688E-01	1.05*	-1.35*		
	80000.	0.728	0.664E-01	0.693	-1.30	1.08*	-1.29*
NE= 0.1E+17							
2S - 2P	2500.	0.717	-0.391	0.158	-0.101	0.147	-0.857E-01
20581.3A	5000.	0.750	-0.470	0.169	-0.117	0.156	-0.999E-01
c= 0.21E+21	10000.	0.798	-0.455	0.181	-0.134	0.166	-0.115
	20000.	0.876	-0.427	0.196	-0.153	0.177	-0.131
	40000.	1.00	-0.313	0.213	-0.173	0.191	-0.148
	80000.	1.13	-0.251	0.233	-0.195	0.208	-0.167
2P - 3S	2500.	0.491	0.340	0.107*	0.787E-01*	0.921E-01*	0.645E-01*
7281.4A	5000.	0.555	0.399	0.120	0.975E-01	0.103*	0,816E-01*
c= 0.71E+19	10000.	0.589	0.422	0.135	0.116	0.116	0.981E-01
	20000.	0.617	0.397	0.151	0.135	0.130	0.115
	40000.	0.640	0.314	0.170	0.154	0.146	0.132
	80000.	0.660	0.258	0.190	0.176	0.164	0.150
3S - 3P	2500.	180.	-81.0				
74351.0A	5000.	185.	-84.7	45.2*	-31.2*		
c= 0.58E+20	10000.	182.	-75.0	50.8*	-39.6*		
	20000.	176.	-63.5	57.3*	-47.6*	49.0*	-40.2*
	40000.	171.	-47.5	65.2*	-55.8*	55.1*	-47.4*
	80000.	162.	-36.0	74.5*	-65.0*	62.5*	-54.8*
3S - 4P	2500.	23.5	-8.28				
15083.7A	5000.	23.9	-7.85				
c= 0.11E+19	10000.	23.2	-6.65				
	20000.	22.2	-4.81				
	40000.	20.8	-3.10				
	80000.	18.9	-2.15				
3S - 5P	2500.	26.9	-7.86				
11013.1A	5000.	29.2	-7.82				
c= 0.30E+18	10000.	29.5	-5.84				
	20000.	28.7	-3.73				
	40000.	26.8	-2.35				
	80000.	24.3	-1.12				

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3S - 6P	2500.	31.9*	-8.82*				
9603.4A	5000.	39.8	-8.63				
c= 0.13E+18	10000.	43.4	-6.57				
	20000.	43.6	-4.10				
	40000.	41.3	-1.61				
	80000.	37.7	-0.584				
3P - 4S	2500.	27.1	13.7				
21132.0A	5000.	28.7	15.6				
c= 0.47E+19	10000.	28.8	15.4				
	20000.	28.4	13.2	7.35*	6.00*		
	40000.	28.4	9.95	8.28*	7.11*		
	80000.	27.3	7.34	9.40*	8.27*	7.98*	7.03*
3P - 5S	2500.	23.8	12.7				
13411.8A	5000.	25.1	14.6				
c= 0.19E+19	10000.	25.4	14.0				
	20000.	25.4	11.5				
	40000.	25.7	8.12				
	80000.	24.4	4.99				
3P - 6S	2500.	34.9*	16.6*				
11225.9A	5000.	36.4*	20.0*				
c= 0.13E+19	10000.	37.2	19.8				
	20000.	37.7	15.3				
	40000.	38.0	10.3				
	80000.	35.7	5.08				
3P - 4D	2500.	46.5	10.1				
19089.4A	5000.	47.7	9.13				
c= 0.18E+18	10000.	45.2	7.69				
	20000.	40.9	5.74				
	40000.	35.9	3.71				
	80000.	31.1	2.32				
3P - 5D	2500.	40.6	7.09				
12968.4A	5000.	47.2	6.85				
c= 0.54E+17	10000.	48.1	5.71				
	20000.	45.2	4.40				
	40000.	40.6	2.99				
	80000.	35.4	1.91				
3P - 6D	2500.	45.3	6.45				
11045.0A	5000.	57.2	6.64				
c= 0.18E+17	10000.	63.9	5.66				
	20000.	63.4	4.39				
	40000.	58.6	3.10				
	80000.	51.9	2.06				
3D - 4P	2500.	41.0	-5.25				
18555.6A	5000.	42.9	-4.96				
c= 0.15E+17	10000.	41.2	-3.83				
	20000.	38.1	-3.09				
	40000.	34.1	-2.10				
	80000.	30.1	-1.23				
3D - 5P	2500.	37.7	-10.3				
12755.7A	5000.	40.6	-9.98				
c= 0.40E+18	10000.	40.6	-7.54				
	20000.	39.1	-5.28				
	40000.	36.0	-2.97				
	80000.	32.3	-1.39				

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3D - 4F	2500.	23.2	-0.924				
18696.9A	5000.	22.8	-0.335E-02				
c= 0.19E+18	10000.	20.9	0.483				
	20000.	18.6	0.863				
	40000.	16.5	0.794				
	80000.	14.8	0.869				
3D - 5F	2500.	30.1	0.400				
12790.3A	5000.	34.5	0.893				
c= 0.12E+17	10000.	34.6	1.23				
	20000.	32.1	1.16				
	40000.	28.7	1.01				
	80000.	25.1	0.964				
2S - 2P	2500.	0.106	-0.496E-01	0.301E-01	-0.134E-01	0.293E-01	-0.114E-01
10830.0A	5000.	0.107	-0.603E-01	0.309E-01	-0.154E-01	0.299E-01	-0.132E-01
c= 0.11E+21	10000.	0.114	-0.631E-01	0.320E-01	-0.175E-01	0.307E-01	-0.150E-01
	20000.	0.131	-0.622E-01	0.333E-01	-0.199E-01	0.316E-01	-0.170E-01
	40000.	0.156	-0.475E-01	0.349E-01	-0.224E-01	0.328E-01	-0.192E-01
	80000.	0.188	-0.383E-01	0.368E-01	-0.252E-01	0.343E-01	-0.216E-01
2P - 3S	2500.	0.266	0.190	0.610E-01	0.473E-01	0.526E-01	0.393E-01
7065.3A	5000.	0.312	0.229	0.683E-01	0.571E-01	0.589E-01	0.481E-01
c= 0.12E+20	10000.	0.342	0.261	0.764E-01	0.669E-01	0.659E-01	0.568E-01
	20000.	0.360	0.248	0.857E-01	0.771E-01	0.738E-01	0.658E-01
	40000.	0.375	0.216	0.960E-01	0.880E-01	0.827E-01	0.752E-01
	80000.	0.404	0.173	0.108	0.998E-01	0.927E-01	0.855E-01
3S - 4P	2500.	6.22	3.28				
12528.0A	5000.	7.03	2.45				
c= 0.36E+19	10000.	8.19	1.80				
	20000.	8.75	1.00	2.14*	1.69*		
	40000.	9.08	0.352	2.38*	1.98*	2.07*	1.68*
	80000.	8.99	-0.314E-01	2.67*	2.29*	2.30*	1.95*
3S - 5P	2500.	10.4	4.84				
9463.6A	5000.	11.7	3.70				
c= 0.10E+19	10000.	13.3	2.80				
	20000.	13.8	1.33				
	40000.	13.9	0.518				
	80000.	13.4	0.127				
3S - 6P	2500.	17.3	6.06				
8361.8A	5000.	20.7	5.13				
c= 0.47E+18	10000.	23.4	3.98				
	20000.	24.3	2.81				
	40000.	24.3	1.00				
	80000.	23.1	0.758				
3P - 4S	2500.	11.1	5.80	1.95*	1.22*		
21120.0A	5000.	13.7	7.07	2.19*	1.60*	1.90*	1.32*
c= 0.24E+20	10000.	15.5	7.76	2.44*	1.96*	2.12*	1.65*
	20000.	17.0	7.63	2.72*	2.32*	2.36*	1.96*
	40000.	17.9	6.23	3.04	2.69	2.63*	2.29*
	80000.	18.6	5.08	3.40	3.07	2.94	2.63
3P - 5S	2500.	12.0	7.10				
12846.0A	5000.	13.5	8.71				
c= 0.75E+19	10000.	14.3	8.96				
	20000.	14.9	7.80				
	40000.	15.9	5.81	3.86*	3.31*		
	80000.	16.1	4.23	4.34*	3.85*		

NE= 0.1E+17

TRANSITION	T(K)	ELECTRONS 2WE(A)	DE(A)	PROTONS 2WI(A)	DI(A)	IONIZED HELIUM 2WI(A)	DI(A)
3P - 6S	2500.	19.8*	10.8*				
10667.6A	5000.	21.3	13.4				
c= 0.29E+19	10000.	22.8	13.9				
	20000.	22.8	11.1				
	40000.	24.3	7.50				
	80000.	23.9	4.44				
3P - 7S							
9702.7A	5000.	35.1*	20.5*				
c= 0.15E+19	10000.	36.6	20.8				
	20000.	38.0	16.1				
	40000.	40.8	10.9				
	80000.	38.8	5.01				
3P - 4D	2500.	24.9	-4.55				
17002.0A	5000.	25.8	-3.94				
c= 0.20E+18	10000.	25.7	-2.83				
	20000.	24.3	-1.92				
	40000.	22.3	-1.08				
	80000.	20.1	-0.314				
3P - 5D	2500.	27.4	-5.44				
11969.1A	5000.	31.7	-4.28				
c= 0.60E+17	10000.	33.2	-3.36				
	20000.	32.0	-2.11				
	40000.	29.5	-0.922				
	80000.	26.4	-0.675E-02				
3P - 6D	2500.	32.7	-7.32				
10311.0A	5000.	43.7	-5.63				
c= 0.26E+17	10000.	49.2	-4.74				
	20000.	49.0	-2.82				
	40000.	46.2	-1.22				
	80000.	41.6	0.605E-01				
3D - 4P	2500.	17.6	9.39				
19543.0A	5000.	18.8	8.41				
c= 0.87E+19	10000.	21.1	6.44				
	20000.	22.2	4.69	5.47*	4.37*		
	40000.	22.3	2.52	6.11*	5.15*	5.30*	4.37*
	80000.	21.8	1.29	6.87*	5.95*	5.90*	5.08*
3D - 5P	2500.	20.6	10.1				
12985.0A	5000.	22.8	8.24				
c= 0.20E+19	10000.	25.6	7.20				
	20000.	26.4	4.83				
	40000.	26.4	3.00				
	80000.	25.2	1.15				
3D - 6P	2500.	30.5	11.2				
10996.6A	5000.	36.3	9.56				
c= 0.81E+18	10000.	40.9	8.88				
	20000.	42.2	6.32				
	40000.	42.1	4.14				
	80000.	39.9	1.68				
3D - 4F	2500.	21.0	1.74				
18686.0A	5000.	20.7	2.25				
c= 0.24E+18	10000.	19.0	2.27				
	20000.	17.0	2.18				
	40000.	15.3	1.69				
	80000.	13.9	1.42				

		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	ΔW(A)	DI(A)	ΔW(A)	DI(A)	ΔW(A)	DI(A)
3S - 5P	2500.	5.82	0.815				
12785.0A	5000.	6.67	1.05				
f= 0.125E+00	10000.	6.90	1.06				
	20000.	7.57	1.02				
	40000.	8.16	0.791				
	80000.	8.59	0.664				
3D - 5P							
3D - 5P	2500	4.57	-2.72	2.55	-0.820	1.42	-0.664
19530.3A	5000.	7.56	-4.85	1.68	-1.04	1.56	-0.863
f= 0.273E+01	10000.	7.98	-4.60	1.81	-1.25	1.65	-1.05
	20000	8.76	-4.21	1.96	-1.46	1.77	-1.24
	40000.	10.0	-3.61	2.13	-1.68	1.91	-1.43
	80000.	11.3	-2.91	2.30	-1.91	2.07	-1.64
3P - 3D	2500.	1.91	1.32				
19530.3A	5000.	2.23	1.85				
f= 4.728E+00	10000.	2.53	2.08				
	20000.	2.83	2.22	1.51*	1.18*		
	40000.	3.08	2.08	1.69*	1.43*	1.46*	1.20*
	80000.	3.30	1.87	1.90*	1.67*	1.63*	1.42*
3P - 3S	2500.	1.95	-0.478	0.254	-0.147	0.283	-0.973E-0
12785.0A	5000.	2.09	-0.590	0.307	-0.182	0.295	-0.120
f= 0.504E-01	10000.	2.24	-0.659	0.319	-0.187	0.305	-0.142
	20000.	2.39	-0.617	0.332	-0.192	0.316	-0.164
	40000.	2.51	-0.478	0.348	-0.220	0.328	-0.138
	80000.	2.58	-0.269	0.368	-0.249	0.343	-0.213
3P - 5S	2500.	3.63	1.69	0.389*	0.265*		
9068.9A	5000.	4.12	2.15	0.678*	0.423*		
f= 0.328E-01	10000.	4.63	2.50	0.764*	0.565*	0.657*	0.464*
	20000	5.09	2.62	0.856*	0.657*	0.737*	0.584*
	40000	5.75	2.15	0.960*	0.828*	0.826*	0.700*
	80000	6.36	1.72	1.06	0.961	0.926*	0.818*
3D - 5P	2500.	58.6	17.7				
12785.0A	5000	65.3	23.3				
f= 0.918E+00	10000.	70.3	12.5				
	20000.	84.8	7.43				
	40000.	93.5	3.06				
	80000.	89.3	-0.214				
3P - 5S	2500.	50.6	0.19				
12785.0A	5000	61.3	11.3				
f= 0.218E+00	10000	63.6	13.3				
	20000.	61.8	10.0				
	40000	58.5	5.25				
	80000	55.1	0.90				
3S - 3P	2500.	10.6	-4.28	2.36*	-0.638*	1.86*	-0.440*
10830.3A	5000	10.7	-5.51	2.84*	-1.04*	2.60*	-0.816*
f= 0.53E-01	10000	11.6	-5.96	3.11*	-1.40*	2.93*	-1.15*
	20000.	13.1	-6.01	3.29	-1.73	3.11*	-1.45*
	40000.	15.6	-5.60	3.47	-2.06	3.26*	-1.74*
	80000.	18.8	-5.03	3.68	-2.40	3.43	-2.04

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