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E. A. Gurtovenko and R. I. Kostik

THE SYSTEM OF SOLAR OSCILLATOR STRENGTHS

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The system of solar oscillator strengths

We use observed central intensities and equivalent widths of 1958 solar lines of 49 chemical elements between 3 000 Å and 10 000 Å to derive the values of oscillator strengths of these lines. The internal accuracy of oscillator strengths is ± 0.07 dex. The heights of formation of these lines in the solar atmosphere are calculated as well.

Е. А. Гуртовенко, Р. І. Костик

Система сонячних сил осциляторів

За даними спостережень центральних інтенсивностей та еквівалентних ширин 1958 сонячних спектральних ліній 49 хімічних елементів в межах від 3000 Å до 10 000 Å ми знайшли величини сил осциляторів ліній з похибкою ± 0.07 dex. В роботі також наведені висоти утворення в сонячній атмосфері цих спектральних ліній.

INTRODUCTION

In the early eighties in Kiev a program was started to determine empirical oscillator strengths of spectral lines from observed optical solar spectrum, following the classical example set by Holweger (1967). As first results, there were two extensive lists of gf values of Fe I lines (Gurtovenko & Kostik 1981, 1982). They were found to be of good quality, both in comparison with laboratory data and in studies of their internal consistency. Now we have calculated the oscillator strengths for about 2000 lines of 49 chemical elements. Here we present the results of these calculations. We hope they will be useful for solution of many astrophysical problems.

METHOD

We proceed from the assumption that the solar photosphere may be regarded as a natural furnace where Fraunhofer lines originate in order to measure their oscillator strengths. In this case the method is straightforward: using the observed Fraunhofer lines one can calculate the product $\log L = \log(Agf)$, where $\log A = \log(N_{\rm El}/N_{\rm H}) + 12$ is the adopted elemental abundance value. The product $\log L$ can be determined from line profiles, equivalent widths, central intensities as well as from the synthesis of the whole Fraunhofer spectrum of the specific chemical element. In this study we have used two sets of gf measurements obtained from equivalent widths W and central depths D of the lines: gf_W values and gf_D values, respectively. Comparison of oscillator strengths determined from equivalent widths and those obtained from central depths gives us possibility to estimate the accuracy of both methods as well as to study the uncertainties of the underlaying data.

OBSERVATIONS AND INPUT DATA

Equivalent widths and central depths have been taken from the Liège Atlas of the solar spectrum (Delbouille et al. 1973). We have used the estimation of the true continuum by Ardeberg &

Virdefors (1975) and by Rutten & van der Zalm (1984). Observed central depths and equivalent widths have been fitted to appropriate quantities in the calculated spectrum using standard plane-parallel LTE modelling, photospheric model by Holweger & Müller (1974) and SPANSAT (Gadun & Sheminova 1988) computer code. The hyperfine structure of the lines has been taken into account. The sensitivity of such fits to the choice of the atmospheric model and to the NLTE effects was analysed by Rutten & Kostik (1982). They have found that the empirical LTE model photosphere by Holweger & Müller "masks" NLTE departures. The input list of abundances is specified in Table 1. It closely follows the results by Grevesse (1984) except for several elements. Following our previous investigation (Gurtovenko & Kostik 1989), we have used a height h (in km) dependent microturbulence $v_{\rm mi}$ (in km s^{-1}):

$$v_{\rm mi} = \begin{cases} 1.08 & \text{if } h \leq 130 \\ 0.55 & \text{if } h > 420 \\ 0.95 + 0.001(1.88 - 0.00675h)h & \text{otherwise} \end{cases}$$

and a height dependent macroturbulence $v_{\rm ma}$ (in km s^{-1}):

$$v_{\rm ma} = \begin{cases} 1.85 & \text{if } h \leq 200 \\ 1.65 & \text{if } h > 675 \\ 2.10 - 0.001(1.55 - 0.00130h)h & \text{otherwise} \end{cases}$$

The van der Waals' broadening parameter was calculated from Unsöld's (1955) formula multiplied by a corrective enhancement factor $E = 1.5$.

RESULTS AND DISCUSSION

The calculated values $\log gf$ are given in Table 2. The columns from 1 to 11 specify: serial number; the wavelength of the line; the chemical element ; number of a multiplet; the excitation potential of a lower level; the observed central depth; the logarithm of observed equivalent width divided by wavelength; the line-centre height of formation in the solar atmosphere; the height of

Table 1: Input list of abundances

El	$\log A$	El	$\log A$	El	$\log A$	El	$\log A$
Li	1.06	V	4.00	Nb	1.42	Sm	0.9
Be	1.15	Cr	5.64	Mo	1.92	Eu	0.5
C	8.65	Mn	5.40	Ru	1.84	Gd	1.2
N	7.95	Fe	7.60	Rh	1.12	Dy	1.1
O	8.90	Co	4.92	Pd	1.69	Er	0.9
Na	6.32	Ni	6.22	Cd	1.86	Tm	0.3
Mg	7.60	Cu	4.10	In	1.70	Yb	0.2
Al	6.49	Zn	4.60	Ba	2.11	Lu	0.8
Si	7.64	Rb	2.60	La	1.1	Hf	0.9
Ca	6.38	Sr	2.90	Ce	1.6	W	1.1
Sc	3.06	Y	2.24	Pr	0.8	Os	1.4
Ti	5.06	Zr	2.56	Nd	1.4	Pb	1.9
						Th	0.2

"formation of equivalent width"; logarithm of oscillator strengths obtained from central depths of lines; logarithm of oscillator strengths obtained from equivalent widths. The data in the first four columns have been taken from Moore's et al. tables (1966). The effective height of line formation has been calculated using methods suggested by Gurtovenko et al. (1974)

$$h_D = \int hF_D(h)dh/D, \qquad h_W = \int h_{D\lambda} D_\lambda d\lambda / W.$$

Here h is the geometrical height in the photosphere; $F_D = g\eta \exp(-\tau_l)$ is a contribution function to the line depression; $g(\tau_\lambda) = \int_{B(\tau_\lambda)}^{B(\infty)} \exp(-\tau_\lambda) dB$; B is the Planck function; τ_λ is the continuum optical depth near the line; η is the ratio between the line and continuum absorption coefficient; D_λ is the depth of line profile as a function of a wavelength λ.

The errors of oscillator strengths obtained are given by $\Delta \log gf =$

$\Delta\log L + \Delta\log A$. Here $\Delta\log A$ is a correction to the adopted elemental abundance value which is the same for all lines of that element. The error $\Delta\log L$ is due to inaccuracies of observations, the photospheric model, the velocity field, the damping constant, NLTE effects, etc. The sources of these errors may compensate each other. Since we have two sets of gf measurements, there are two ways of studying errors in them: i) analysing the differences of each set with results from others; ii) analysing the differences between the two sets. We have not performed such analysis yet. Here we calculated only the r.m.s. value of differences $\log gf_W - \log gf_D$. From the data in Table 2 we obtain $\epsilon = \pm 0.07$ dex. We think that the r.m.s. ϵ define the internal accuracy of the scale of solar oscillator strengths. Finally, we note that Rutten & van der Zalm (1984), Thevenin (1989, 1990), Stalin, Sinha & Sanwal (1997) have also used the solar spectrum to derive solar gf values for a large number of atomic lines.

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Table 2: Solar oscillator strengths

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1	3028.443	Nb II	2	0.44		-5.542		147		-0.42
2	3032.767	Nb II		1.31		-5.902		122		-0.01
3	3058.660	Os I		0.00		-5.473		200		-0.75
4	3073.347	Er II		0.00		-5.529		154		-0.41
5	3129.644	Nb II		1.32		-6.650		122		-0.77
6	3130.414	Be II	1	0.00	0.840	-4.556	235	176	-0.21	-0.16
7	3131.057	Be II	1	0.00	0.720	-4.663	181	145	-0.50	-0.45
8	3175.784	Nb II		1.32		-6.388		123		-0.51
9	3215.595	Nb II	1	0.44		-5.428		153		-0.28
10	3242.702	Pd I	3	0.81		-5.106		185		0.03
11	3261.055	Cd I	1	0.00		-5.399		194		-2.36
12	3267.944	Os I		0.00		-5.923		199		-1.27
13	3280.550	Rh I		0.19		-6.437		185		-0.42
14	3294.360	Nb II		1.98		-6.615		110		-0.13
15	3301.559	Os I	1	0.00		-5.661		202		-0.98
16	3343.965	Nb II		1.03		-6.483		135		-0.87
17	3385.087	Er II		0.05		-5.244		171		0.02
18	3396.849	Rh I	3	0.00		-5.783		191		0.07
19	3397.062	Lu II	4	1.46		-5.327		130		0.08
20	3404.579	Pd I	2	0.81		-4.988		188		0.28
21	3434.889	Rh I	2	0.00		-5.483		192		0.42
22	3460.773	Pd I	2	0.81		-5.319		188		-0.30
23	3516.943	Pd I	1	0.94		-5.345		186		-0.20
24	3517.671	Nb II		2.01		-6.400		115		0.12
25	3583.099	Rh I		0.19		-5.931		190		0.10
26	3601.197	Zr I	13	0.15	0.233	-5.449	207	196	0.17	0.20
27	3609.547	Pd I	2	0.94		-5.177		188		0.04
28	3652.878	Er II		0.89	0.032	-6.220	135	129	-0.54	-0.40
29	3663.698	Zr I	12	0.15	0.341	-5.252	212	196	0.34	0.42
30	3683.479	Pb I	1	0.97	0.165	-5.674	181	172	-0.52	-0.54
31	3687.970	Nb II		2.16		-6.722		98		-0.15
32	3692.359	Rh I	1	0.00		-5.710		188		0.11
33	3694.198	Yb II	1	0.00		-4.804		272		0.71
34	3700.268	Tm II	6	0.03	0.095	-5.966	165	158	-0.53	-0.60
35	3700.728	Er II		0.05	0.035	-6.063	159	153	-1.29	-1.02

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
36	3701.374	Tm II	2	0.00	0.080	-6.050	165	158	-0.62	-0.71
37	3740.724	Nb II		1.62		-6.272		113		-0.18
38	3741.197	Th II		0.19	0.048	-6.054	162	157	-0.86	-0.72
39	3742.280	Ru I	2	0.34	0.120	-5.825	196	188	-0.08	-0.14
40	3752.524	Os I	2	0.34		-5.875		191		-0.94
41	3781.018	Er II		0.67	0.038	-6.146	143	137	-0.67	-0.53
42	3818.857	Nb II		1.59		-6.091		115		-0.02
43	3891.383	Zr I	11	0.15	0.215	-5.463	200	189	0.07	0.14
44	3894.200	Pd I	8	1.45		-5.999		171		-0.51
45	3896.233	Er II		0.05	0.270	-5.233	192	176	-0.30	-0.02
46	3958.642	Pd I	8	1.45		-6.255		170		-0.78
47	3977.230	Os I		0.64		-6.754		183		-1.57
48	4002.929	V II	9	1.43	0.678	-4.844	249	193		-1.10
49	4010.176	Fe I	915	3.64	0.459	-5.115	174	146	-2.17	-2.18
50	4011.087	Co I	2	0.10	0.080	-5.886	206	199	-3.93	-3.89
51	4013.232	Ti I	186	2.10	0.100	-5.784	145	136	-0.81	-0.79
52	4019.137	Th II	3	0.00		-5.741		168		-0.56
53	4019.293	Co I	16	0.58	0.218	-5.423	207	196	-2.97	-2.90
54	4020.898	Co I	16	0.43	0.810	-4.720	397	307	-1.88	-1.91
55	4021.332	Nd II	36	0.32	0.227	-5.530	190	176	-0.14	-0.17
56	4022.442	Fe I	173	2.40	0.321	-5.361	179	163	-3.59	-3.67
57	4023.229	Sm II	4	0.04	0.042	-6.349	173	167	-0.94	-1.06
58	4023.683	Sc I	7	0.02	0.674	-4.925	275	231	0.27	0.30
59	4027.667	Ni I		3.90	0.576	-4.945	191	146	-0.62	-0.56
60	4028.929	Zr I		0.52	0.007	-6.942	175	170	-1.14	-1.08
61	4034.091	Zr II	42	0.80	0.097	-5.842	149	141	-1.62	-1.61
62	4036.772	V II	9	1.48	0.440	-5.057	174	149		-1.50
63	4037.682	Fe I	118	2.28	0.328	-5.254	182	166	-3.69	-3.64
64	4037.909	Gd II	49	0.56	0.058	-6.115	156	150	-0.47	-0.48
65	4039.092	Cr I	251	3.85	0.523	-4.999	172	122	0.44	0.33
66	4039.296	Cr I	251	3.85	0.090	-5.761	122	101	-0.57	-0.56
67	4039.562	V II	32	1.82	0.140	-5.593	125	116		-1.85
68	4041.912	Fe I	602	3.30	0.178	-5.590	145	134	-3.07	-3.10
69	4042.583	Ce II	140	0.50	0.200	-5.591	179	167	0.03	-0.01
70	4050.323	Zr II	43	0.71	0.367	-5.266	190	168	-0.99	-0.99

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
71	4054.076	Cr II	19	3.10	0.360	-5.137	124	106	-2.67	-2.51
72	4059.718	Fe I	767	3.55	0.804	-4.732	324	220	-1.42	-1.31
73	4059.958	Nd II	63	0.20	0.124	-5.834	181	171	-0.56	-0.64
74	4060.076	Ti I	254	2.30	0.071	-5.981	139	131	-0.79	-0.82
75	4060.265	Ti I	80	1.05	0.562	-5.033	229	197	-0.81	-0.82
76	4062.231	Ce II	34	1.37	0.068	-6.018	140	132	0.32	0.33
77	4068.842	Ce II	82	0.70	0.083	-5.986	160	152	-0.21	-0.26
78	4072.695	Zr I	46	0.69	0.085	-5.920	178	171	0.14	0.14
79	4073.125	Dy II		0.54	0.120	-5.797	161	151	-0.32	-0.33
80	4073.486	Ce II	4	0.48	0.274	-5.473	192	175	0.19	0.11
81	4075.706	Ce II	57	0.70	0.189	-5.632	173	160	0.19	0.13
82	4078.817	Fe I		3.64	0.331	-5.278	156	137	-2.40	-2.41
83	4081.732	Cr I	66	2.71	0.081	-5.918	134	125	-1.74	-1.77
84	4082.589	Co I	16	0.63	0.175	-5.574	203	193	-3.04	-3.02
85	4082.946	Mn I	5	2.18	0.889	-4.622	485	297		-0.40
86	4085.574	Gd II	50	0.73	0.091	-5.895	156	148	-0.10	-0.09
87	4085.719	Zr II	54	0.93	0.071	-6.049	144	137	-1.65	-1.70
88	4087.276	Fe II	28	2.58	0.176	-5.478	105	95	-4.79	-4.68
89	4088.560	Fe I	906	3.64	0.719	-4.888	260	190	-1.64	-1.72
90	4091.556	Fe I	357	2.83	0.765	-4.845	307	227	-2.29	-2.31
91	4091.817	Os I		0.76	0.011	-6.792	186	182	-1.53	-1.49
92	4093.618	Ni I	1	0.17	0.045	-6.232	196	190	-5.61	-5.66
93	4099.788	V I	27	0.30		-4.875		230		-0.13
94	4103.312	Dy II		0.10	0.221	-5.572	188	174	-0.42	-0.49
95	4111.355	Cr I	97	2.90	0.482	-5.051	179	148	-0.56	-0.52
96	4114.449	Fe I	357	2.83	0.881	-4.631	467	285	-1.47	-1.46
97	4114.937	Fe I	695	3.37	0.769	-4.832	301	215	-1.73	-1.79
98	4120.836	Ce II	112	0.32	0.172	-5.598	182	171	-0.22	-0.19
99	4124.484	Fe I		3.64	0.414	-5.173	169	145	-2.24	-2.26
100	4124.910	Y II	14	0.41	0.314	-5.312	189	171	-1.52	-1.48
101	4128.305	Y I	5	0.07	0.120	-5.697	185	177	0.01	0.08
102	4156.082	Nd II	10	0.18	0.382	-5.324	227	201	0.04	-0.04
103	4189.816	V I	24	0.29	0.158	-5.415	190	181		-1.07
104	4190.707	Co I	1	0.00	0.481	-4.866	261	235	-2.80	-2.85
105	4194.484	Fe I	274	2.73	0.280	-5.381	170	155	-3.35	-3.38

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
106	4204.461	Cr I	272	3.98	0.208	-5.409	131	105	-0.04	-0.06
107	4208.984	Zr II	41	0.71	0.622	-5.020	280	221	-0.51	-0.52
108	4232.379	Nd II	8	0.06	0.194	-5.605	197	184	-0.47	-0.51
109	4232.734	Fe I	3	0.11	0.795	-4.870	402	315	-4.86	-4.90
110	4235.285	Mn I	23	2.89	0.837	-4.684	391	255		0.22
111	4241.117	Fe I	351	2.83	0.612	-4.994	236	192	-2.65	-2.68
112	4252.293	Co I	1	0.10	0.341	-5.091	236	220	-2.97	-3.00
113	4256.805	Fe I	1102	4.26	0.456	-5.075	169	136	-1.57	-1.54
114	4257.348	Cr I	131	3.01	0.107	-5.709	133	123	-1.32	-1.26
115	4265.918	Mn I	23	2.94	0.721	-4.843	279	208		-0.31
116	4266.203	Ti I	252	2.30	0.109	-5.779	145	136	-0.58	-0.60
117	4281.371	Ti I	44	0.81	0.384	-5.230	206	187	-1.33	-1.32
118	4281.594	Fe I	171	2.45	0.120	-5.752	161	152	-4.06	-4.07
119	4284.527	Nd II	10	0.63	0.090	-5.924	168	160	-0.31	-0.33
120	4287.410	Ti I	44	0.84	0.760	-4.809	330	256	-0.55	-0.42
121	4293.551	Cr I	96	2.91	0.192	-5.457	143	130	-1.13	-1.06
122	4316.801	Ti II	94	2.05	0.595	-4.941	199	159	-1.68	-1.60
123	4317.320	Zr II	40	0.71	0.195	-5.521	169	156	-1.35	-1.32
124	4318.934	Sm II	27	0.28	0.131	-5.631	181	172	-0.18	-0.05
125	4319.441	Fe I	214	2.61	0.217	-5.459	167	155	-3.61	-3.59
126	4319.625	Cr I	96	2.89	0.202	-5.456	145	131	-1.12	-1.06
127	4322.500	La II	25	0.17	0.128	-5.490	176	167	-0.82	-0.51
128	4329.039	Sm II	15	0.18	0.123	-5.728	183	174	-0.31	-0.26
129	4330.242	Ti II	94	2.05	0.543	-4.972	190	154	-1.77	-1.67
130	4347.238	Fe I	2	0.00	0.608	-5.019	298	257	-5.44	-5.44
131	4349.781	Ce II	59	0.70	0.086	-5.874	165	156	-0.20	-0.14
132	4349.953	V II		2.04	0.021	-6.277	114	108		-2.38
133	4364.656	Ce II	135	0.50	0.165	-5.587	181	169	-0.06	0.00
134	4365.898	Fe I	415	2.99	0.669	-4.942	264	205	-2.35	-2.40
135	4374.820	Ti II	93	2.06	0.552	-4.897	199	159	-1.76	-1.46
136	4377.539	Cr I	83	2.91	0.162	-5.587	142	129	-1.21	-1.21
137	4382.168	Ce II	2	0.68	0.130	-5.790	171	161	-0.01	-0.06
138	4385.672	Nd II	50	0.20	0.208	-5.559	198	184	-0.30	-0.32
139	4387.898	Fe I	476	3.07	0.817	-4.714	389	262	-1.65	-1.55
140	4389.250	Fe I	2	0.05	0.835	-4.794	476	357	-4.61	-4.55

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
141	4395.844	Ti II	61	1.24	0.746	-4.825	328	241	-2.06	-2.00
142	4398.016	Y II	5	0.13	0.662	-4.974	332	257	-1.11	-1.07
143	4399.223	Ce II	81	0.33	0.099	-5.903	177	168	-0.48	-0.52
144	4400.574	V I	22	0.26	0.592	-4.927	266	228		-0.40
145	4410.520	Ni I	88	3.31	0.616	-4.909	233	182	-1.06	-0.93
146	4417.715	Ti II	40	1.16	0.868	-4.635	527	340	-1.33	-1.11
147	4420.469	Os I	1	0.00	0.030	-6.367	209	205	-1.84	-1.81
148	4420.668	Sc II	14	0.62	0.201	-5.458	167	155	-2.20	-2.15
149	4421.941	Ti II	93	2.06	0.496	-4.941	184	151	-1.87	-1.58
150	4423.840	Fe I	830	3.65	0.662	-4.916	251	190	-1.72	-1.73
151	4427.910	Ti II	61	1.24	0.099	-5.522	140	132	-3.60	-3.26
152	4432.574	Fe I	797	3.57	0.658	-4.921	251	191	-1.80	-1.82
153	4436.352	Mn I	22	2.92	0.719	-4.833	291	216		-0.26
154	4436.586	Ti I	160	1.88	0.118	-5.713	156	148	-0.94	-0.91
155	4439.641	Fe I	515	3.05	0.277	-5.367	167	152	-3.05	-3.06
156	4439.887	Fe I	116	2.28	0.662	-4.949	277	222	-3.06	-3.07
157	4441.266	Ti I	160	1.87	0.112	-5.809	156	148	-0.98	-1.05
158	4442.832	Fe I	69	2.18	0.755	-4.845	341	258	-2.87	-2.84
159	4442.996	Zr II	88	1.49	0.283	-5.336	164	147	-0.41	-0.34
160	4443.805	Ti II	19	1.08	0.899	-4.475	637	368	-0.94	-0.57
161	4444.207	V I	21	0.27	0.376	-5.057	220	201		-0.66
162	4444.391	Ce II	19	0.92	0.058	-6.164	157	150	-0.17	-0.24
163	4444.559	Ti II	31	1.12	0.710	-4.862	284	218	-2.30	-2.22
164	4445.473	Fe I	2	0.09	0.573	-5.086	288	251	-5.41	-5.48
165	4445.672	Co I	150	3.10	0.100	-5.623	148	139		-0.75
166	4446.387	Nd II	49	0.20	0.173	-5.657	194	182	-0.39	-0.44
167	4447.133	Fe I	69	2.20	0.767	-4.831	353	263	-2.80	-2.77
168	4449.707	Dy II		0.00	0.069	-6.015	176	169	-1.09	-1.08
169	4450.086	Ni I	178	3.94	0.059	-6.064	123	113	-1.90	-1.93
170	4450.902	Ti I	160	1.88	0.640	-4.900	253	203	0.19	0.30
171	4452.004	V I	87	1.86	0.273	-5.258	173	158		0.63
172	4453.004	Mn I	22	2.94	0.621	-4.912	240	190		-0.50
173	4453.316	Ti I	113	1.43	0.724	-4.829	306	238	-0.04	0.08
174	4457.043	Mn I	28	3.07	0.515	-5.023	191	162	-0.62	-0.64
175	4457.770	V I	101	1.87	0.119	-5.572	157	148		0.28

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
176	4460.777	Cr I	63	2.71	0.161	-5.550	146	135	-1.40	-1.35
177	4462.992	Nd II	50	0.56	0.172	-5.633	184	172	-0.05	-0.06
178	4465.805	Ti I	146	1.74	0.496	-5.045	212	182	-0.23	-0.18
179	4467.336	Sm II	53	0.66	0.137	-5.629	174	164	0.20	0.30
180	4470.133	Mn I	22	2.94	0.649	-4.905	253	197		-0.48
181	4470.480	Ni I	86	3.40	0.794	-4.718	363	237	-0.31	-0.21
182	4470.852	Ti II	40	1.16	0.711	-4.856	307	231	-2.24	-2.15
183	4475.305	Cr I	95	2.89	0.200	-5.502	145	132	-1.11	-1.13
184	4477.465	Y I	14	1.36	0.083	-5.845	159	150	1.07	1.15
185	4478.016	Fe I	69	2.20	0.271	-5.372	185	171	-3.87	-3.86
186	4478.312	Co I	150	3.10	0.161	-5.499	154	143		-0.61
187	4479.383	Ce II	203	0.56	0.253	-5.372	195	178	0.23	0.33
188	4481.609	Fe I	827	3.69	0.656	-4.889	251	190	-1.68	-1.62
189	4483.906	Co I	150	3.13	0.208	-5.419	158	146		-0.48
190	4485.680	Fe I	830	3.69	0.788	-4.767	352	234	-1.17	-1.22
191	4485.973	Fe I	825	3.65	0.259	-5.392	154	138	-2.52	-2.53
192	4486.906	Ce II	57	0.30	0.184	-5.585	191	179	-0.20	-0.19
193	4486.965	Fe I	988	3.93	0.093	-5.735	132	122	-2.78	-2.67
194	4487.250	Y I	14	1.37	0.156	-5.534	166	155	1.39	1.51
195	4487.359	Fe I	824	3.60	0.076	-5.928	136	127	-3.19	-3.19
196	4487.488	Y I	14	1.36	0.065	-5.902	157	149	0.95	1.09
197	4488.324	Ti II	115	3.12	0.584	-4.934	196	149	-0.66	-0.57
198	4489.742	Fe I	2	0.12	0.874	-4.704	578	404	-4.03	-3.94
199	4491.398	Fe II	37	2.85	0.749	-4.779	318	218	-3.03	-2.95
200	4491.652	Cr I	95	2.90	0.279	-5.323	156	139	-0.92	-0.90
201	4491.852	Cr I	83	2.99	0.142	-5.659	140	128	-1.20	-1.22
202	4492.309	Cr I	197	3.37	0.340	-5.234	157	133	-0.35	-0.35
203	4493.527	Ti II	18	1.08	0.392	-5.134	186	162	-2.98	-2.88
204	4498.727	Cr I	81	2.91	0.312	-5.311	160	141	-0.85	-0.87
205	4498.895	Mn I	22	2.94	0.681	-4.888	271	206		-0.41
206	4501.973	V I	62	1.38	0.067	-5.777	164	157		-0.41
207	4502.215	Mn I	22	2.92	0.686	-4.851	275	208		-0.39
208	4502.594	Fe I	796	3.57	0.365	-5.229	171	149	-2.38	-2.38
209	4504.207	Fe I	988	3.96	0.025	-6.417	126	118	-3.35	-3.36
210	4505.914	Y I	14	1.37	0.022	-6.452	153	147	0.47	0.52

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
211	4506.598	Ca I	24	2.52	0.104	-5.725	130	119	-2.44	-2.40
212	4506.738	Ti II	30	1.13	0.117	-5.667	146	137	-3.62	-3.53
213	4506.832	Cr I	288	4.18	0.156	-5.546	128	103	0.02	-0.02
214	4507.109	Zr I	31	0.54	0.036	-6.109	182	177	-0.40	-0.21
215	4507.211	Fe I	474	3.11	0.129	-5.681	151	142	-3.40	-3.37
216	4507.395	Ca I	24	2.52	0.101	-5.654	129	119	-2.45	-2.32
217	4508.285	Fe II	38	2.85	0.808	-4.707	400	257	-2.66	-2.62
218	4510.824	Fe I	823	3.60	0.139	-5.641	143	132	-2.90	-2.87
219	4511.051	Fe I	970	3.94	0.070	-5.907	130	120	-2.91	-2.85
220	4511.316	In I	1	0.27	0.028	-6.183	157	151	-0.59	-0.36
221	4511.891	Cr I	150	3.09	0.490	-5.018	189	154	-0.34	-0.26
222	4512.270	Ca I	24	2.52	0.274	-5.297	147	129	-1.94	-1.92
223	4512.734	Ti I	42	0.84	0.761	-4.818	350	269	-0.47	-0.39
224	4512.988	Ni I	163	3.70	0.247	-5.361	147	131	-1.41	-1.35
225	4518.027	Ti I	42	0.83	0.795	-4.780	386	288	-0.32	-0.22
226	4519.984	Ni I	51	1.68	0.474	-5.150	225	197	-2.90	-2.94
227	4523.074	Ce II	2	0.52	0.175	-5.562	184	172	-0.01	0.05
228	4523.398	Fe I	829	3.65	0.537	-5.025	208	168	-1.98	-1.97
229	4523.922	Sm II	41	0.43	0.124	-5.717	180	170	-0.06	-0.00
230	4524.215	V I	99	1.89	0.070	-5.750	154	146		0.10
231	4525.871	Fe I	319	2.88	0.252	-5.405	169	155	-3.26	-3.26
232	4527.781	Fe I	641	3.25	0.367	-5.204	178	157	-2.68	-2.64
233	4533.246	Ti I	42	0.85	0.864	-4.656	516	341	0.27	0.29
234	4534.785	Ti I	42	0.84	0.868	-4.679	529	344	0.28	0.20
235	4535.141	Cr I	33	2.54	0.433	-5.171	187	161	-0.97	-1.02
236	4537.672	Fe I	594	3.27	0.230	-5.464	159	145	-2.94	-2.97
237	4540.711	Cr I	150	3.10	0.632	-4.901	236	177	-0.03	0.01
238	4541.059	Cr I	33	2.54	0.352	-5.265	174	153	-1.12	-1.15
239	4542.227	Zr I	49	0.63	0.056	-6.008	183	176	-0.11	-0.02
240	4542.422	Fe I	894	3.64	0.513	-5.031	202	166	-2.03	-1.99
241	4543.223	Fe I	893	3.64	0.048	-6.091	134	126	-3.36	-3.32
242	4544.020	Ti II	60	1.24	0.468	-5.041	197	168	-2.65	-2.56
243	4545.957	Cr I	10	0.94	0.842	-4.744	472	326	-1.36	-1.41
244	4546.465	Fe I	1047	4.19	0.086	-5.803	127	117	-2.57	-2.50
245	4547.230	Ni I	146	3.62	0.482	-5.054	190	156	-1.01	-0.96

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
246	4548.766	Ti I	42	0.83	0.789	-4.790	382	287	-0.34	-0.29
247	4550.406	Os I		1.84	0.007	-7.035	166	161	-0.70	-0.70
248	4551.648	Fe I	972	3.94	0.354	-5.251	164	141	-2.05	-2.07
249	4553.164	Ni I	135	3.66	0.188	-5.518	141	128	-1.60	-1.58
250	4554.039	Ba II	1	0.00	0.940	-4.380	932	326		0.11
251	4555.289	Cr I	212	3.43	0.058	-6.062	126	115	-1.20	-1.24
252	4555.488	Ti I	42	0.85	0.752	-4.841	345	267	-0.49	-0.48
253	4556.926	Fe I	638	3.25	0.330	-5.229	173	154	-2.75	-2.68
254	4558.645	Cr II	44	4.06	0.748	-4.763	305	203	-0.59	-0.50
255	4560.273	Ce II	8	0.91	0.158	-5.626	172	160	0.31	0.34
256	4560.711	V I	109	1.95	0.120	-5.742	157	148		0.17
257	4560.961	Ce II	2	0.68	0.086	-5.911	169	160	-0.21	-0.20
258	4561.191	Cr I	34	2.53	0.091	-5.867	145	135	-1.85	-1.87
259	4561.414	Fe I		2.76	0.411	-5.159	196	173	-3.06	-3.03
260	4562.359	Ce II	1	0.48	0.296	-5.354	208	187	0.25	0.28
261	4562.629	Ti I	7	0.02	0.150	-5.618	200	191	-2.62	-2.59
262	4563.234	Cr I	246	3.85	0.097	-5.844	129	109	-0.52	-0.62
263	4563.418	Ti I	266	2.43	0.139	-5.590	149	139	-0.34	-0.29
264	4566.020	Fe I	1169	4.47	0.009	-6.784	117	107	-3.31	-3.26
265	4566.516	Fe I	641	3.30	0.555	-5.034	222	181	-2.28	-2.30
266	4567.406	Ni I	102	3.54	0.043	-6.136	136	129	-2.43	-2.38
267	4568.320	Ti II	60	1.22	0.341	-5.208	174	155	-2.94	-2.86
268	4570.020	Co I	178	3.62	0.063	-5.868	136	127	-0.41	-0.53
269	4572.281	Ce II	1	0.68	0.205	-5.523	186	171	0.23	0.25
270	4574.215	Fe I	554	3.21	0.481	-5.061	203	172	-2.50	-2.44
271	4574.719	Fe I	115	2.28	0.702	-4.913	310	241	-2.92	-2.95
272	4575.105	Cr I	196	3.37	0.130	-5.689	134	121	-0.88	-0.90
273	4576.340	Fe II	38	2.84	0.693	-4.824	276	197	-3.24	-3.05
274	4577.180	V I	4	0.00	0.385	-5.204	229	210		-1.09
275	4577.687	Sm II	23	0.25	0.067	-6.024	178	171	-0.53	-0.51
276	4582.828	Fe II	37	2.84	0.631	-4.919	227	169	-3.42	-3.37
277	4583.406	Ti II	39	1.16	0.387	-5.192	185	162	-2.91	-2.89
278	4584.445	Ru I	5	1.00	0.018	-6.547	181	176	-0.31	-0.26
279	4586.375	V I	4	0.04	0.509	-5.035	253	224		-0.84
280	4587.129	Fe I	795	3.57	0.649	-4.932	256	195	-1.80	-1.82

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
281	4588.199	Cr II	44	4.07	0.717	-4.815	278	189	-0.72	-0.70
282	4592.047	Cr II	44	4.07	0.521	-4.977	166	127	-1.36	-1.22
283	4593.527	Fe I	971	3.94	0.340	-5.216	162	141	-2.07	-2.02
284	4594.121	V I	4	0.07	0.518	-4.932	255	224		-0.69
285	4594.641	Co I	176	3.62	0.112	-5.609	140	131	-0.17	-0.26
286	4596.406	Fe I	823	3.65	0.382	-5.140	175	151	-2.27	-2.17
287	4598.121	Fe I	554	3.28	0.773	-4.797	355	248	-1.61	-1.64
288	4598.738	Fe I	819	3.69	0.188	-5.536	147	134	-2.66	-2.66
289	4600.754	Cr I	21	1.00	0.839	-4.753	472	324	-1.29	-1.39
290	4602.004	Fe I	39	1.61	0.793	-4.803	410	303	-3.19	-3.14
291	4607.082	Fe I	724	3.41	0.048	-6.136	139	132	-3.58	-3.58
292	4607.328	Sr I	2	0.00	0.603	-5.013	279	227	0.15	0.17
293	4609.262	Ti II	39	1.18	0.144	-5.588	149	139	-3.46	-3.39
294	4614.516	Cr I	245	3.85	0.062	-5.983	126	108	-0.74	-0.77
295	4614.578	Ni I	99	3.60	0.059	-5.957	131	123	-2.21	-2.12
296	4614.727	Cr I	196	3.37	0.064	-5.957	128	118	-1.22	-1.18
297	4616.125	Cr I	21	0.98	0.851	-4.742	503	334	-1.21	-1.36
298	4616.621	Cr II	44	4.07	0.495	-4.999	158	122	-1.42	-1.29
299	4617.270	Ti I	145	1.75	0.718	-4.840	308	236	0.31	0.39
300	4619.598	Cr I	81	2.97	0.453	-5.134	186	156	-0.51	-0.56
301	4620.512	Fe II	38	2.83	0.587	-4.938	213	162	-3.56	-3.44
302	4622.746	Cr I	81	2.99	0.249	-5.377	153	137	-0.90	-0.88
303	4625.766	Co I	176	3.71	0.080	-5.846	136	127		-0.40
304	4626.176	Cr I	21	0.97	0.834	-4.761	468	324	-1.33	-1.46
305	4627.363	Si I		5.08	0.173	-5.375	112	96	-2.41	-2.30
306	4627.547	Fe I	593	3.30	0.166	-5.541	153	142	-3.09	-3.03
307	4628.156	Ce II	1	0.52	0.243	-5.460	198	181	0.17	0.18
308	4629.062	Zr II	139	2.49	0.043	-6.178	111	104	-0.43	-0.40
309	4630.125	Fe I	115	2.28	0.779	-4.819	383	280	-2.58	-2.60
310	4630.777	Fe I	969	3.94	0.046	-6.169	129	121	-3.10	-3.12
311	4631.484	Fe I	1152	4.35	0.156	-5.605	132	119	-2.13	-2.14
312	4633.254	Cr I	186	3.12	0.121	-5.735	138	126	-1.15	-1.18
313	4634.074	Cr II	44	4.05	0.610	-4.908	198	146	-1.13	-1.03
314	4635.177	V I	4	0.07		-6.013		182		-1.96
315	4635.309	Fe II	186	5.95	0.211	-5.392	62	50	-1.69	-1.59

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
316	4635.852	Fe I	349	2.84	0.671	-4.932	284	221	-2.45	-2.48
317	4636.324	Ti II	38	1.16	0.221	-5.340	159	146	-3.26	-3.13
318	4636.672	Fe I	513	3.05	0.063	-5.988	148	141	-3.79	-3.76
319	4639.367	Ti I	145	1.74	0.504	-5.033	219	187	-0.20	-0.13
320	4639.668	Ti I	145	1.74	0.512	-5.013	221	188	-0.19	-0.09
321	4639.937	Ti I	145	1.73	0.468	-5.120	210	183	-0.27	-0.29
322	4641.992	Cr I	244	3.85	0.073	-5.967	127	109	-0.67	-0.75
323	4648.660	Ni I	98	3.42	0.806	-4.681	405	251	-0.08	-0.03
324	4651.285	Cr I	21	0.98	0.800	-4.793	413	301	-1.55	-1.58
325	4655.457	La II	75	1.95	0.014	-6.464	122	116	-0.17	0.08
326	4656.469	Ti I	6	0.00	0.762	-4.845	379	296	-1.28	-1.27
327	4656.977	Fe II	43	2.89	0.410	-5.109	150	124	-3.90	-3.80
328	4657.199	Ti II	59	1.24	0.585	-4.944	238	192	-2.40	-2.32
329	4657.586	Fe I	346	2.84	0.408	-5.160	197	172	-2.98	-2.95
330	4658.301	Fe I	591	3.27	0.206	-5.487	158	145	-3.00	-2.99
331	4661.148	Fe II	170	5.55	0.043	-6.163	47	42	-2.87	-2.86
332	4661.531	Fe I	1207	4.56	0.451	-5.082	175	139	-1.26	-1.25
333	4662.508	La II	8	0.00	0.087	-5.890	181	173	-1.17	-1.14
334	4670.168	Fe II	25	2.57	0.355	-5.175	144	123	-4.30	-4.21
335	4670.406	Sc II	24	1.36	0.673	-4.874	289	220	-0.50	-0.39
336	4671.680	Mn I	21	2.89	0.133	-5.629	152	142	-1.64	-1.63
337	4672.832	Fe I	40	1.61	0.373	-5.171	215	195	-4.24	-4.16
338	4678.855	Fe I	821	3.60	0.829	-4.643	449	261	-0.75	-0.81
339	4681.914	Ti I	6	0.05	0.776	-4.813	396	305	-1.15	-1.06
340	4683.559	Fe I	346	2.83	0.638	-4.937	269	213	-2.54	-2.49
341	4685.270	Ca I	51	2.93	0.576	-4.858	204	153	-0.93	-0.88
342	4687.805	Zr I	43	0.73	0.136	-5.685	190	181	0.40	0.44
343	4690.137	Fe I	820	3.69	0.662	-4.884	268	200	-1.62	-1.57
344	4690.793	Ti I	76	1.07	0.050	-6.127	171	164	-2.11	-2.14
345	4693.941	Cr I	99	2.98	0.264	-5.291	156	139	-0.87	-0.77
346	4695.148	Cr I	99	2.97	0.180	-5.490	147	134	-1.09	-1.03
347	4697.055	Cr I	62	2.71	0.328	-5.240	170	150	-0.99	-0.95
348	4700.613	Cr I	62	2.71	0.212	-5.477	155	141	-1.25	-1.26
349	4705.922	Ni I	128	3.64	0.143	-5.714	139	128	-1.75	-1.82
350	4706.305	Fe I	890	3.64	0.097	-5.758	140	131	-3.03	-2.96

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
351	4707.754	Cr I	195	3.37	0.068	-5.881	130	119	-1.19	-1.10
352	4708.012	Cr I	186	3.17	0.629	-4.904	243	181	0.06	0.09
353	4708.660	Ti II	49	1.24	0.590	-4.965	250	199	-2.43	-2.37
354	4709.492	Ru I	14	1.13	0.027	-6.372	181	175	-0.01	0.04
355	4709.711	Mn I	21	2.89	0.675	-4.830	283	215		-0.41
356	4716.836	Fe I	634	3.25	0.080	-5.835	147	138	-3.49	-3.41
357	4718.422	Cr I	186	3.19	0.672	-4.852	266	192	0.21	0.24
358	4719.512	Ti II	59	1.24	0.150	-5.641	150	140	-3.38	-3.39
359	4720.129	Fe II	54	3.20	0.050	-6.011	89	83	-4.82	-4.70
360	4722.160	Zn I	2	4.03	0.696	-4.847	292	206	-0.45	-0.37
361	4722.609	Ti I	75	1.05	0.219	-5.417	187	175	-1.42	-1.36
362	4722.758	Cr I	195	3.37	0.030	-6.296	127	117	-1.56	-1.54
363	4723.879	Ni I	167	3.68	0.035	-6.212	128	120	-2.37	-2.31
364	4726.137	Fe I	384	3.00	0.213	-5.467	165	153	-3.24	-3.22
365	4729.020	Fe I	1043	4.07	0.473	-5.114	190	155	-1.68	-1.73
366	4730.027	Mg I	10	4.34	0.534	-4.840	182	144	-2.37	-2.19
367	4730.711	Cr I	145	3.08	0.542	-5.037	211	168	-0.22	-0.28
368	4731.160	Ti I	202	2.17	0.128	-5.618	155	146	-0.62	-0.53
369	4731.801	Ni I	163	3.83	0.478	-5.089	191	155	-0.80	-0.81
370	4732.457	Ni I	235	4.10	0.505	-5.030	194	152	-0.49	-0.46
371	4733.598	Fe I	38	1.48	0.818	-4.754	470	335	-3.04	-2.97
372	4734.820	Co I	156	3.25	0.087	-5.772	147	139		-0.74
373	4735.844	Fe I	1042	4.07	0.680	-4.845	276	197	-1.18	-1.12
374	4737.348	Cr I	145	3.09	0.595	-4.927	230	177	-0.10	-0.04
375	4737.633	Fe I	590	3.27	0.392	-5.144	187	163	-2.60	-2.52
376	4739.113	Mn I	21	2.94	0.608	-4.896	249	197		-0.52
377	4739.484	Zr I	43	0.65	0.076	-5.975	186	179	0.05	0.04
378	4740.164	Ni I	99	3.48	0.200	-5.469	149	135	-1.72	-1.68
379	4741.531	Fe I	346	2.83	0.763	-4.813	368	264	-2.06	-2.06
380	4741.934	Sr I	5	1.77	0.012	-6.672	132	124	-0.28	-0.21
381	4742.293	Ti I	111	1.46	0.136	-5.574	171	161	-1.27	-1.15
382	4742.793	Ti I	233	2.24	0.376	-5.158	185	164	0.06	0.13
383	4743.816	Sc I	14	1.45	0.076	-5.778	160	152	0.33	0.49
384	4745.129	Fe I	67	2.22	0.162	-5.631	176	166	-4.13	-4.15
385	4745.301	Cr I	61	2.71	0.167	-5.559	151	139	-1.38	-1.35

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
386	4746.117	Co I	182	3.93	0.023	-6.407	128	121		-0.78
387	4747.680	Ti I	233	2.25	0.054	-6.120	147	140	-0.95	-1.00
388	4748.730	La II	65	0.93	0.054	-6.080	153	146	-0.51	-0.46
389	4749.656	Co I	156	3.04	0.228	-5.152	167	153	-0.22	-0.31
390	4749.945	Fe I	1206	4.56	0.393	-5.119	165	135	-1.37	-1.30
391	4751.824	Na I	11	2.10	0.128	-5.580	120	107	-2.07	-2.04
392	4754.359	Co I	156	3.23	0.075	-5.792	147	139		-0.78
393	4755.141	Cr I	124	3.01	0.096	-5.816	139	129	-1.37	-1.36
394	4756.117	Cr I	145	3.09	0.668	-4.882	286	204	0.10	0.09
395	4757.840	Ru I	12	0.93	0.022	-6.399	185	180	-0.29	-0.18
396	4758.121	Ti I	233	2.25	0.527	-5.043	219	183	0.35	0.34
397	4758.418	Ni I	193	3.85	0.039	-6.141	126	118	-2.16	-2.08
398	4759.273	Ti I	233	2.25	0.564	-4.994	231	189	0.42	0.44
399	4759.656	Ti I	202	2.17	0.020	-6.433	146	140	-1.47	-1.40
400	4759.742	Cr I	124	3.01	0.017	-6.481	132	124	-2.15	-2.06
401	4759.906	Cr I	169	3.11	0.034	-6.240	132	123	-1.75	-1.72
402	4760.062	Fe I	384	3.04	0.098	-5.811	153	145	-3.59	-3.57
403	4760.199	Ni I	114	3.70	0.028	-6.290	128	120	-2.45	-2.38
404	4761.523	Mn I	21	2.95	0.714	-4.802	313	229		-0.23
405	4762.371	Mn I	21	2.88	0.817	-4.653	441	276		0.34
406	4762.777	Ti II	17	1.08	0.411	-5.134	188	165	-2.95	-2.86
407	4764.297	Cr I	231	3.55	0.331	-5.274	158	133	-0.18	-0.23
408	4765.867	Mn I	21	2.94	0.757	-4.779	353	248		-0.05
409	4767.855	Cr I	231	3.56	0.212	-5.480	142	124	-0.44	-0.48
410	4768.070	Co I	156	3.19	0.097	-5.764	150	141		-0.79
411	4772.305	Zr I	43	0.62	0.059	-6.016	185	179	-0.10	-0.03
412	4773.410	Ni I	167	3.70	0.211	-5.501	147	132	-1.48	-1.51
413	4773.961	Ce II	17	0.92	0.111	-5.734	169	159	0.14	0.23
414	4775.137	Cr I	230	3.55	0.071	-5.916	128	117	-1.00	-0.97
415	4775.879	C I	6	7.49	0.138	-5.400	35	27	-2.21	-2.11
416	4776.066	Fe I	635	3.30	0.304	-5.321	172	154	-2.74	-2.75
417	4777.852	Sm II	3	0.04	0.013	-6.759	181	175	-1.46	-1.47
418	4778.258	Ti I	232	2.24	0.183	-5.483	160	148	-0.37	-0.31
419	4779.437	Fe I	720	3.41	0.507	-5.076	213	176	-2.24	-2.26
420	4780.809	Fe I	633	3.25	0.101	-5.775	149	141	-3.38	-3.34

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
421	4781.723	Ti I	41	0.85	0.146	-5.566	185	176	-1.82	-1.74
422	4784.937	Zr I	44	0.69	0.013	-6.601	180	175	-0.71	-0.57
423	4785.957	Fe I	1044	4.14	0.322	-5.289	160	138	-1.91	-1.93
424	4787.488	Fe I	408	3.02	0.024	-6.404	147	141	-4.25	-4.22
425	4788.762	Fe I	588	3.24	0.713	-4.848	318	233	-1.86	-1.83
426	4789.336	Cr I	31	2.54	0.668	-4.896	279	211	-0.43	-0.43
427	4789.652	Fe I	753	3.55	0.795	-4.747	406	259	-1.06	-1.18
428	4790.559	Fe I	1068	4.15	0.104	-5.784	133	122	-2.51	-2.51
429	4790.742	Fe I	632	3.25	0.105	-5.773	150	141	-3.36	-3.34
430	4790.965	Ni I	71	1.95	0.160	-5.613	176	166	-3.29	-3.29
431	4791.598	Sm II	7	0.10	0.036	-6.266	182	176	-0.95	-0.91
432	4792.859	Co I	158	3.25	0.368	-5.172	185	162	-0.02	-0.05
433	4793.422	Ni I	158	3.70	0.053	-6.012	131	122	-2.16	-2.09
434	4793.965	Fe I	512	3.05	0.097	-5.824	153	145	-3.59	-3.58
435	4794.355	Fe I	115	2.42	0.139	-5.647	170	161	-4.01	-3.98
436	4794.820	Ti II	29	1.13	0.026	-6.331	141	135	-4.31	-4.23
437	4798.262	Fe I	1042	4.19	0.500	-5.055	198	158	-1.50	-1.51
438	4798.539	Ti II	17	1.08	0.504	-5.041	224	187	-2.75	-2.68
439	4798.730	Fe I	38	1.61	0.395	-5.175	222	200	-4.20	-4.14
440	4799.062	Fe I	1098	4.28	0.040	-6.179	125	115	-2.85	-2.81
441	4799.406	Fe I	888	3.64	0.425	-5.171	188	160	-2.18	-2.21
442	4800.125	Fe I	384	3.04	0.193	-5.496	163	151	-3.25	-3.22
443	4801.027	Cr I	168	3.12	0.559	-4.993	219	172	-0.14	-0.15
444	4801.613	Fe I	1115	4.28	0.051	-6.009	126	116	-2.73	-2.64
445	4802.523	Fe I	1206	4.61	0.164	-5.501	132	116	-1.85	-1.77
446	4805.871	Zr I	43	0.69	0.012	-6.580	180	175	-0.73	-0.55
447	4807.711	Fe I	688	3.37	0.561	-4.980	232	188	-2.17	-2.09
448	4808.148	Fe I	633	3.25	0.336	-5.244	179	159	-2.72	-2.69
449	4809.473	Zr I		1.58	0.016	-6.568	162	156	0.24	0.32
450	4809.937	Fe I	793	3.57	0.229	-5.412	158	143	-2.65	-2.62
451	4810.535	Zn I	2	4.08	0.721	-4.799	322	220	-0.25	-0.13
452	4810.730	Cr I	144	3.08	0.094	-5.723	138	128	-1.31	-1.19
453	4811.348	Nd II	3	0.06	0.107	-5.843	195	185	-0.77	-0.78
454	4811.980	Ni I	130	3.66	0.252	-5.328	153	137	-1.42	-1.33
455	4812.344	Cr II	30	3.86	0.363	-5.163	133	110	-1.89	-1.78

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
456	4813.109	Fe I	630	3.27	0.267	-5.345	168	152	-2.85	-2.81
457	4813.477	Co I	158	3.21	0.457	-5.038	205	174	0.17	0.06
458	4813.719	Fe I	1243	4.58	0.040	-6.091	120	110	-2.55	-2.46
459	4814.270	Cr I	144	3.09	0.116	-5.703	140	129	-1.20	-1.16
460	4814.598	Ni I	98	3.60	0.197	-5.422	147	134	-1.62	-1.51
461	4815.055	Zr I	44	0.65	0.023	-6.340	182	177	-0.49	-0.35
462	4815.223	Fe I	720	3.41	0.130	-5.670	150	140	-3.10	-3.07
463	4815.629	Zr I	43	0.60	0.039	-6.191	185	179	-0.31	-0.24
464	4815.816	Sm II	14	0.18	0.038	-6.268	180	174	-0.85	-0.84
465	4815.930	Ni I	131	3.54	0.180	-5.481	147	134	-1.72	-1.64
466	4816.137	Cr I		4.53	0.047	-6.043	110	96	-0.26	-0.21
467	4816.465	Ti I	40	0.82	0.027	-6.360	175	169	-2.63	-2.60
468	4816.676	Fe I	588	3.27	0.017	-6.604	142	135	-4.17	-4.19
469	4817.352	C I	5	7.48	0.050	-5.793	25	20	-2.74	-2.59
470	4820.410	Ti I	126	1.50	0.469	-5.083	220	191	-0.48	-0.44
471	4825.715	Fe II	30	2.63	0.082	-5.838	106	99	-5.07	-5.01
472	4827.453	V I	3	0.04	0.127	-5.616	200	192		-1.55
473	4828.055	Zr I	44	0.62	0.012	-6.684	182	177	-0.81	-0.72
474	4829.367	Cr I	31	2.53	0.646	-4.898	269	206	-0.50	-0.44
475	4831.180	Ni I	111	3.61	0.714	-4.813	315	220	-0.36	-0.28
476	4831.651	V I	3	0.02		-5.415		198		-1.36
477	4832.426	V I	3	0.00	0.165	-5.597	205	195		-1.56
478	4833.191	Fe II	30	2.66	0.122	-5.627	111	102	-4.86	-4.74
479	4835.867	Fe I	1068	4.10	0.556	-5.006	219	171	-1.47	-1.49
480	4836.855	Cr I	144	3.10	0.170	-5.523	145	132	-1.00	-0.95
481	4837.398	Ti I	250	2.29	0.027	-6.336	145	139	-1.22	-1.18
482	4840.000	Fe II	30	2.68	0.103	-5.740	105	98	-4.90	-4.85
483	4840.879	Ti I	53	0.90	0.728	-4.888	349	270	-0.45	-0.52
484	4843.812	W I	1	0.41	0.007	-7.013	213	209	-1.37	-1.35
485	4848.250	Cr II	30	3.86	0.618	-4.913	199	149	-1.22	-1.18
486	4851.496	V I	3	0.00	0.346	-5.147	228	210		-1.03
487	4864.738	V I	3	0.02		-5.226		205		-1.02
488	4867.867	Co I	158	3.10	0.585	-4.909	251	201	0.30	0.24
489	4874.012	Ti II	114	3.09	0.402	-5.113	150	125	-1.06	-0.95
490	4874.355	Fe I	467	3.06	0.286	-5.338	176	159	-3.01	-2.99

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
491	4875.488	V I	3	0.04	0.488	-5.051	256	226		-0.84
492	4875.880	Fe I	687	3.32	0.653	-4.919	281	214	-1.97	-1.97
493	4880.059	Cr I	167	3.12	0.067	-5.903	136	127	-1.43	-1.34
494	4880.527	V I	50	1.19	0.127	-5.551	177	168		-0.33
495	4881.559	V I	3	0.07	0.514	-4.942	262	230		-0.71
496	4882.148	Fe I	687	3.42	0.717	-4.819	326	235	-1.63	-1.55
497	4882.457	Ce II		1.35	0.033	-6.322	149	143	-0.02	0.01
498	4882.691	Co I	158	3.25	0.061	-5.814	147	139		-0.78
499	4883.687	Y II	22	1.08	0.669	-4.937	351	260	-0.05	0.03
500	4884.055	V II	197	3.76	0.084	-5.730	90	83		-0.26
501	4885.430	Fe I	966	3.88	0.722	-4.821	324	224	-1.14	-1.17
502	4885.773	Cr I	30	2.54	0.363	-5.233	183	160	-1.08	-1.09
503	4892.855	Fe I	1070	4.22	0.548	-4.960	216	167	-1.36	-1.27
504	4893.812	Fe II	36	2.83	0.175	-5.491	114	103	-4.48	-4.42
505	4896.434	Fe I	984	3.88	0.368	-5.152	175	150	-2.06	-1.97
506	4899.512	Co I	92	2.03	0.072	-5.787	173	166	-1.83	-1.94
507	4900.121	Y II	22	1.03	0.638	-4.947	328	248	-0.19	-0.06
508	4904.418	Ni I	129	3.54	0.767	-4.743	380	245	-0.10	-0.10
509	4905.133	Fe I	986	3.93	0.359	-5.174	172	149	-2.03	-1.94
510	4908.605	Fe I	115	2.48	0.085	-5.850	165	157	-4.19	-4.15
511	4911.195	Ti II	114	3.12	0.504	-4.940	186	146	-0.78	-0.51
512	4913.617	Ti I	157	1.87	0.565	-4.976	244	202	0.07	0.14
513	4913.977	Ni I	132	3.74	0.602	-4.915	245	185	-0.59	-0.49
514	4915.230	Ti I	157	1.89	0.091	-5.892	160	152	-1.05	-1.06
515	4917.234	Fe I	1066	4.19	0.650	-4.885	267	193	-1.11	-1.10
516	4924.773	Fe I	114	2.27	0.808	-4.733	468	317	-2.18	-2.17
517	4926.148	Ti I	39	0.82	0.080	-5.914	181	174	-2.14	-2.14
518	4928.336	Ti I	200	2.15	0.339	-5.176	185	165	-0.09	0.00
519	4930.797	Ni I	193	3.83	0.217	-5.465	148	132	-1.34	-1.34
520	4931.117	Cr I		5.54	0.046	-6.012	84	78	0.57	0.67
521	4935.418	Fe I	886	3.64	0.037	-6.258	138	130	-3.47	-3.48
522	4935.832	Ni I	177	3.94	0.632	-4.888	259	189	-0.30	-0.24
523	4936.340	Cr I	166	3.11	0.500	-5.057	205	166	-0.26	-0.27
524	4943.445	Ce II		1.21	0.022	-6.467	152	146	-0.33	-0.27
525	4945.637	Fe I	1113	4.21	0.465	-5.046	192	156	-1.54	-1.46

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
526	4946.031	Ni I	148	3.80	0.272	-5.309	156	138	-1.23	-1.17
527	4953.207	Ni I	111	3.74	0.589	-4.933	241	183	-0.62	-0.53
528	4953.715	Cr I	166	3.12	0.060	-6.005	136	126	-1.48	-1.46
529	4954.301	Fe I	1093	4.18	0.022	-6.425	126	118	-3.19	-3.16
530	4954.805	Cr I	166	3.12	0.548	-5.030	205	165	-0.14	-0.23
531	4961.922	Fe I	845	3.63	0.295	-5.314	168	150	-2.44	-2.42
532	4962.293	Zr II	66	0.97	0.058	-5.980	155	148	-1.69	-1.58
533	4962.578	Fe I	1097	4.18	0.583	-4.937	235	178	-1.30	-1.24
534	4964.719	Ti I	173	1.97	0.102	-5.804	160	151	-0.92	-0.92
535	4964.930	Cr I	9	0.94	0.471	-5.142	237	208	-2.43	-2.46
536	4965.168	Ni I	147	3.80	0.301	-5.313	161	141	-1.17	-1.17
537	4966.809	Cr I	259	3.85	0.037	-6.152	124	111	-1.00	-0.93
538	4967.527	Ni I	141	3.80	0.164	-5.534	142	129	-1.52	-1.45
539	4969.926	Fe I	1066	4.22	0.715	-4.777	319	214	-0.80	-0.75
540	4976.133	Ni I	112	3.61	0.340	-5.225	171	149	-1.27	-1.22
541	4976.324	Ni I	49	1.68	0.464	-5.145	235	205	-2.89	-2.91
542	4976.695	Ni I	254	4.23	0.075	-5.913	125	115	-1.50	-1.48
543	4979.586	Fe I	883	3.64	0.230	-5.436	159	144	-2.58	-2.57
544	4981.734	Ti I	38	0.85	0.866	-4.601	626	350	0.50	0.59
545	4982.133	Y II	20	1.03	0.127	-5.672	161	151	-1.40	-1.32
546	4985.254	Fe I	984	3.93	0.795	-4.685	430	250	-0.51	-0.65
547	4985.551	Fe I	318	2.86	0.815	-4.672	485	302	-1.42	-1.42
548	4986.227	Fe I	1070	4.20	0.535	-5.022	216	169	-1.40	-1.41
549	4987.625	Fe I	1094	4.18	0.039	-6.184	128	120	-2.94	-2.91
550	4991.066	Ti I	38	0.84	0.834	-4.657	508	345	0.35	0.38
551	4991.855	Fe I	1094	4.20	0.185	-5.417	143	129	-2.17	-2.03
552	4992.785	Fe I	1110	4.26	0.109	-5.703	134	123	-2.39	-2.31
553	4993.348	Fe II	36	2.81	0.423	-5.113	169	138	-3.91	-3.84
554	4995.410	Fe I	1113	4.26	0.162	-5.553	140	126	-2.18	-2.14
555	4995.656	Ni I	145	3.63	0.217	-5.431	152	137	-1.53	-1.48
556	4997.098	Ti I	5	0.00	0.391	-5.229	237	216	-2.09	-2.12
557	4998.230	Ni I	111	3.59	0.614	-4.948	259	195	-0.69	-0.70
558	4999.508	Ti I	38	0.83	0.833	-4.705	533	351	0.25	0.19
559	5000.730	Fe II	25	2.78	0.115	-5.690	108	100	-4.80	-4.70
560	5001.473	CA II	15	7.50	0.117	-5.602	40	30	-0.70	-0.61

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
561	5003.738	Ni I	50	1.68	0.403	-5.214	221	197	-3.00	-3.02
562	5004.891	Mn I	20	2.92	0.153	-5.586	157	146	-1.56	-1.55
563	5005.164	Ti II	71	1.57	0.248	-5.362	160	145	-2.79	-2.73
564	5009.652	Ti I	5	0.02	0.288	-5.355	221	206	-2.27	-2.26
565	5010.937	Ni I	144	3.63	0.550	-5.006	229	179	-0.81	-0.80
566	5016.164	Ti I	38	0.85	0.699	-4.904	339	266	-0.57	-0.64
567	5016.473	Fe I	1089	4.26	0.371	-5.205	172	145	-1.68	-1.69
568	5022.863	Ti I	38	0.83	0.739	-4.833	377	287	-0.41	-0.36
569	5023.180	Fe I	1095	4.28	0.415	-5.162	181	149	-1.57	-1.60
570	5024.848	Ti I	38	0.82	0.704	-4.877	344	270	-0.57	-0.54
571	5025.074	Fe I	1110	4.26	0.227	-5.425	148	132	-2.00	-1.98
572	5025.301	Fe I		4.28	0.198	-5.502	144	129	-2.06	-2.06
573	5026.484	Ni I	158	3.70	0.032	-6.250	131	123	-2.39	-2.33
574	5029.625	Fe I	718	3.41	0.564	-4.977	242	194	-2.09	-2.02
575	5032.723	Ni I	207	3.90	0.243	-5.363	152	134	-1.20	-1.14
576	5036.461	Ti I	110	1.44	0.707	-4.870	338	258	0.07	0.04
577	5039.953	Ti I	5	0.02	0.765	-4.812	422	322	-1.13	-1.12
578	5040.246	Fe I	1093	4.22	0.103	-5.744	134	124	-2.45	-2.40
579	5040.609	Ti I	38	0.83	0.174	-5.585	191	181	-1.75	-1.75
580	5042.180	Ni I	131	3.66	0.636	-4.938	273	202	-0.54	-0.60
581	5043.586	Ti I	38	0.84	0.173	-5.563	191	180	-1.74	-1.72
582	5044.207	Fe I	318	2.85	0.722	-4.837	355	260	-2.13	-2.08
583	5046.547	Zr I	62	1.53	0.006	-6.987	165	159	-0.23	-0.15
584	5047.113	Fe I	1242	4.58	0.054	-6.033	124	113	-2.41	-2.38
585	5048.844	Ni I	195	3.85	0.647	-4.898	278	200	-0.31	-0.32
586	5052.141	C I	12	7.68	0.252	-5.093	57	41	-1.58	-1.45
587	5054.637	Fe I	884	3.64	0.445	-5.097	200	168	-2.07	-2.07
588	5057.328	Ru I		0.81	0.006	-7.102	189	184	-0.99	-1.02
589	5057.977	Fe I	967	3.94	0.317	-5.222	168	147	-2.09	-2.00
590	5058.488	Fe I	884	3.64	0.147	-5.659	150	139	-2.82	-2.84
591	5062.098	Ti I	199	2.16	0.174	-5.509	164	153	-0.47	-0.40
592	5064.055	Ti I	294	2.69	0.067	-5.914	143	135	-0.43	-0.36
593	5064.652	Ti I	5	0.05	0.769	-4.791	408	314	-0.97	-0.97
594	5067.148	Fe I	1092	4.22	0.671	-4.846	292	205	-0.96	-0.94
595	5068.301	Cr I	20	1.00	0.150	-5.652	186	177	-3.06	-3.07

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
596	5069.086	Ti II	113	3.12	0.180	-5.529	109	100	-1.60	-1.53
597	5074.750	Fe I	1094	4.20	0.809	-4.572	472	235	0.04	-0.10
598	5079.746	Fe I	16	0.99	0.825	-4.725	551	380	-3.21	-3.18
599	5081.109	Ni I	194	3.85	0.771	-4.709	405	241	0.37	0.29
600	5081.578	Sc I	13	1.45	0.089	-5.772	164	156	0.40	0.49
601	5083.336	Fe I	16	0.96	0.838	-4.707	586	390	-3.06	-3.11
602	5084.102	Ni I	162	3.68	0.758	-4.741	389	245	0.09	0.06
603	5085.824	Cd I		3.92	0.011	-6.685	126	120	-0.20	-0.08
604	5087.055	Ti I	109	1.43	0.281	-5.268	193	177	-0.90	-0.81
605	5087.418	Y II	20	1.08	0.563	-5.044	288	226	-0.31	-0.28
606	5088.148	Fe I	1066	4.15	0.391	-5.163	179	151	-1.74	-1.71
607	5088.539	Ni I	190	3.83	0.355	-5.234	173	148	-1.02	-1.02
608	5088.953	Ni I	162	3.68	0.303	-5.311	166	145	-1.27	-1.27
609	5091.890	Cr I	20	1.00	0.140	-5.748	186	177	-3.10	-3.18
610	5092.805	Nd II	48	0.38	0.054	-6.139	182	175	-0.78	-0.79
611	5094.406	Ni I	164	3.83	0.358	-5.228	173	148	-1.01	-1.01
612	5094.945	Co I	92	2.04	0.141	-5.558	182	172	-1.64	-1.67
613	5097.320	Cr II	24	3.71	0.112	-5.617	99	90	-2.72	-2.55
614	5100.652	Fe II	35	2.81	0.210	-5.424	123	110	-4.42	-4.33
615	5105.539	Cu I	2	1.39	0.736	-4.787	406	303	-1.38	-1.77
616	5109.645	Fe I	1089	4.30	0.692	-4.816	310	211	-0.78	-0.77
617	5112.270	Zr II	95	1.66	0.106	-5.790	146	137	-0.75	-0.72
618	5112.480	Cr I	19	1.00	0.042	-6.269	177	171	-3.66	-3.74
619	5113.434	Ti I	109	1.44	0.314	-5.315	198	180	-0.82	-0.84
620	5117.160	Ce II	23	1.40	0.018	-6.505	149	143	-0.23	-0.13
621	5119.117	Y II	20	0.99	0.172	-5.580	171	159	-1.28	-1.25
622	5119.906	Fe I	960	3.88	0.052	-6.052	136	128	-3.09	-3.04
623	5122.113	Cr I	19	1.03	0.140	-5.713	185	176	-3.07	-3.11
624	5123.004	La II	36	0.32	0.102	-5.946	181	171	-0.78	-0.89
625	5127.355	Fe I	16	0.91	0.817	-4.768	542	379	-3.36	-3.45
626	5127.676	Fe I	1	0.05	0.244	-5.477	236	223	-6.03	-6.08
627	5131.766	Ni I	114	3.70	0.456	-5.071	200	164	-0.93	-0.86
628	5132.676	Fe II	35	2.81	0.271	-5.304	132	116	-4.24	-4.16
629	5132.926	Ti I	230	2.25	0.027	-6.349	169	163	-1.27	-1.23
630	5136.086	Fe I	1036	4.19	0.241	-5.358	153	136	-2.02	-1.96

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
631	5136.797	Fe II	35	2.84	0.158	-5.540	112	103	-4.60	-4.45
632	5137.930	Cr I	207	3.42	0.025	-6.325	130	121	-1.58	-1.51
633	5145.461	Ti I	109	1.46	0.419	-5.161	217	192	-0.60	-0.59
634	5147.477	Ti I	4	0.00	0.454	-5.170	253	227	-1.97	-2.02
635	5148.844	Na I	8	2.10	0.128	-5.633	125	112	-2.06	-2.08
636	5149.793	Co I	39	1.73	0.102	-5.739	185	177	-2.10	-2.16
637	5151.910	Fe I	16	1.01	0.808	-4.776	525	370	-3.33	-3.40
638	5152.180	Ti I	4	0.02	0.438	-5.174	250	224	-1.98	-2.01
639	5155.125	Ni I	206	3.90	0.527	-5.019	222	173	-0.58	-0.57
640	5156.352	Co I	180	4.04	0.069	-5.744	135	126	0.05	0.01
641	5157.973	Ni I	111	3.61	0.220	-5.458	155	140	-1.53	-1.53
642	5159.062	Fe I	1091	4.26	0.689	-4.858	313	213	-0.81	-0.92
643	5159.941	Fe I	1095	4.30	0.055	-6.071	130	120	-2.66	-2.67
644	5176.133	Co I	92	2.07	0.078	-5.571	175	168	-1.56	-1.68
645	5176.562	Ni I	209	3.88	0.595	-4.944	254	190	-0.42	-0.40
646	5188.234	La II	95	2.45	0.017	-6.636	117	111	0.39	0.38
647	5192.973	Ti I	4	0.02	0.767	-4.812	403	312	-1.02	-1.06
648	5194.035	Ti I	183	2.10	0.123	-5.597	162	152	-0.70	-0.56
649	5196.055	Fe I	1091	4.26	0.691	-4.830	318	216	-0.79	-0.83
650	5196.449	Cr I	207	3.45	0.376	-5.159	169	143	-0.16	-0.12
651	5197.152	Ni I	204	3.90	0.275	-5.314	159	140	-1.12	-1.07
652	5197.566	Fe II	49	3.23	0.715	-4.786	357	240	-2.50	-2.38
653	5197.934	Fe I	1091	4.30	0.398	-5.133	181	150	-1.57	-1.52
654	5198.711	Fe I	66	2.22	0.792	-4.717	483	327	-2.17	-2.09
655	5200.164	Cr I	201	3.38	0.232	-5.348	154	136	-0.55	-0.45
656	5200.406	Y II	20	0.99	0.436	-5.140	236	198	-0.67	-0.59
657	5205.285	Fe I	1112	4.26	0.031	-6.280	128	120	-2.96	-2.93
658	5206.805	Fe I	1095	4.28	0.068	-5.915	132	122	-2.59	-2.53
659	5210.035	Co I	167	3.41	0.027	-6.384	144	137		-1.21
660	5210.383	Ti I	4	0.05	0.784	-4.806	474	349	-0.88	-0.96
661	5211.203	Ti I	37	0.84	0.095	-5.818	184	177	-2.04	-2.01
662	5211.531	Ti II	103	2.58	0.377	-5.215	168	142	-1.54	-1.56
663	5212.672	Co I	170	3.51	0.137	-5.448	153	142	-0.12	-0.11
664	5213.340	Fe I	1165	4.39	0.106	-5.759	134	123	-2.27	-2.25
665	5213.801	Fe I	962	3.94	0.086	-5.887	140	130	-2.80	-2.81

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
666	5214.121	Cr I	193	3.37	0.204	-5.499	150	134	-0.63	-0.65
667	5218.203	Cu I	7	3.82	0.536	-4.978	230	178	0.42	0.28
668	5219.023	Pr II	37	0.79	0.025	-6.240	165	159	-0.21	0.02
669	5219.699	Ti I	4	0.02	0.303	-5.326	226	210	-2.23	-2.23
670	5220.066	Cu I	7	3.82	0.158	-5.601	143	131	-0.48	-0.55
671	5220.285	Ni I	114	3.74	0.290	-5.296	165	145	-1.24	-1.19
672	5220.891	Cr I	201	3.38	0.131	-5.668	141	129	-0.85	-0.84
673	5223.180	Fe I	880	3.63	0.340	-5.270	181	158	-2.33	-2.35
674	5223.617	Ti I	183	2.09	0.153	-5.596	166	155	-0.60	-0.57
675	5224.305	Ti I	183	2.13	0.463	-5.137	218	186	0.15	0.09
676	5225.531	Fe I	1	0.11	0.747	-4.865	449	347	-4.74	-4.70
677	5228.379	Fe I	1091	4.20	0.616	-4.942	266	196	-1.14	-1.19
678	5230.965	Ti I	215	2.24	0.023	-6.396	150	144	-1.33	-1.28
679	5234.211	Nd II	74	0.55	0.057	-6.066	180	173	-0.59	-0.54
680	5234.617	Fe II	49	3.22	0.722	-4.772	370	246	-2.45	-2.31
681	5236.199	Fe I	1034	4.19	0.380	-5.221	180	151	-1.71	-1.75
682	5237.312	Cr II	43	4.07	0.511	-4.986	194	147	-1.25	-1.13
683	5238.238	Fe I	962	3.98	0.031	-6.244	134	126	-3.22	-3.15
684	5238.957	Cr I	59	2.71	0.189	-5.536	160	147	-1.30	-1.31
685	5239.812	Sc II	26	1.45	0.525	-5.023	241	195	-0.68	-0.65
686	5240.348	Fe I	584	3.27	0.067	-6.025	151	143	-3.55	-3.58
687	5240.461	Cr I	237	3.67	0.109	-5.660	135	122	-0.67	-0.56
688	5240.863	V I	131	2.37	0.045	-5.935	150	142		0.36
689	5241.445	Cr I	59	2.71	0.042	-6.184	144	137	-2.03	-2.02
690	5243.355	Cr I	201	3.39	0.200	-5.441	150	134	-0.62	-0.56
691	5243.773	Fe I	1089	4.26	0.619	-4.917	268	195	-1.06	-1.07
692	5246.766	Cr II	23	3.71	0.174	-5.506	110	98	-2.47	-2.40
693	5247.051	Fe I	1	0.09	0.716	-4.939	415	328	-4.92	-5.03
694	5247.285	Ti I	183	2.10	0.104	-5.796	161	152	-0.78	-0.78
695	5247.562	Cr I	18	0.96	0.749	-4.826	417	308	-1.61	-1.62
696	5249.426	Cr II	23	3.76	0.104	-5.641	99	91	-2.70	-2.52
697	5249.574	Nd II	75	0.98	0.101	-5.901	175	165	0.10	0.05
698	5249.996	Co I	190	4.17	0.043	-6.159	131	123		-0.31
699	5250.207	Fe I	1	0.12	0.710	-4.908	409	324	-4.92	-4.89
700	5250.645	Fe I	66	2.20	0.793	-4.705	493	330	-2.14	-2.06

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
701	5253.016	Fe I	113	2.28	0.233	-5.485	190	176	-3.86	-3.91
702	5253.465	Fe I	553	3.27	0.725	-4.812	372	262	-1.59	-1.58
703	5254.641	Co I	187	3.97	0.059	-6.026	137	127		-0.34
704	5255.320	Mn I	32	3.13	0.310	-5.140	179	159	-0.77	-0.82
705	5255.508	Nd II	43	0.20	0.092	-5.958	195	185	-0.70	-0.76
706	5256.930	Fe II	41	2.88	0.218	-5.422	128	113	-4.32	-4.25
707	5259.723	Pr II	35	0.63	0.040	-6.242	171	165	-0.15	-0.13
708	5259.965	Ti I	298	2.74	0.075	-5.918	145	137	-0.33	-0.31
709	5260.379	Ca I	22	2.52	0.346	-5.245	171	148	-1.74	-1.78
710	5260.773	Mn I	32	3.12	0.068	-5.696	148	140	-1.48	-1.50
711	5262.617	Fe I	1149	4.32	0.113	-5.707	136	125	-2.30	-2.25
712	5262.879	Fe I	628	3.25	0.206	-5.503	167	154	-3.00	-3.01
713	5263.305	Fe I	553	3.26	0.797	-4.611	491	289	-0.94	-0.90
714	5263.859	Fe I	788	3.57	0.447	-5.164	208	175	-2.17	-2.23
715	5264.797	Fe II	48	3.22	0.485	-5.044	195	152	-3.33	-3.26
716	5265.145	Cr I	201	3.43	0.296	-5.316	163	142	-0.34	-0.36
717	5267.262	Fe I	1146	4.37	0.276	-5.285	158	137	-1.76	-1.68
718	5272.000	Cr I	225	3.45	0.269	-5.390	159	139	-0.39	-0.44
719	5274.219	Ce II	15	1.04	0.098	-5.791	171	162	0.21	0.29
720	5276.863	Nd II	81	0.86	0.019	-6.554	167	161	-0.79	-0.75
721	5279.648	Fe I	584	3.30	0.050	-6.091	149	142	-3.65	-3.62
722	5279.871	Cr II	43	4.07	0.204	-5.465	109	95	-2.05	-2.02
723	5280.625	Co I	172	3.63	0.168	-5.465	155	143	0.01	-0.06
724	5284.602	Fe I	1032	4.19	0.262	-5.347	159	140	-1.97	-1.93
725	5285.121	Fe I	1166	4.43	0.302	-5.309	162	139	-1.65	-1.66
726	5285.625	Cr I	192	3.37	0.040	-6.221	133	124	-1.43	-1.45
727	5287.172	Cr I	225	3.44	0.118	-5.707	140	128	-0.84	-0.83
728	5287.777	Co I	187	4.05	0.045	-6.069	134	125		-0.31
729	5288.523	Fe I	929	3.69	0.600	-4.975	269	205	-1.68	-1.73
730	5289.820	Y II	20	1.03	0.045	-6.141	155	148	-1.89	-1.83
731	5293.023	Fe I	1165	4.39	0.134	-5.719	138	126	-2.15	-2.20
732	5293.152	Nd II	75	0.82	0.123	-5.768	183	173	0.05	0.05
733	5293.371	Cr I	192	3.37	0.052	-6.117	134	125	-1.30	-1.34
734	5293.953	Fe I	1031	4.14	0.332	-5.299	172	148	-1.85	-1.91
735	5294.535	Fe I	875	3.64	0.166	-5.596	155	143	-2.75	-2.76

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
736	5295.301	Fe I	1146	4.41	0.322	-5.261	166	142	-1.62	-1.61
737	5295.785	Ti I	74	1.07	0.138	-5.675	185	176	-1.63	-1.63
738	5296.691	Cr I	18	0.98	0.777	-4.771	467	330	-1.37	-1.36
739	5297.383	Cr I	94	2.89	0.701	-4.824	339	237	0.22	0.20
740	5300.391	Fe I	1240	4.59	0.048	-6.080	126	116	-2.45	-2.41
741	5300.746	Cr I	18	0.98	0.612	-4.974	301	246	-2.05	-2.04
742	5301.035	Co I	39	1.71	0.183	-5.455	196	185	-1.84	-1.87
743	5301.309	Fe I	1162	4.39	0.031	-6.289	127	119	-2.84	-2.81
744	5303.215	V II	54	2.27	0.037	-6.120	123	116		-1.97
745	5304.176	Cr I	225	3.46	0.168	-5.523	145	131	-0.65	-0.60
746	5305.859	Cr II	24	3.83	0.265	-5.320	125	107	-2.10	-2.02
747	5307.367	Fe I	36	1.61	0.761	-4.808	453	330	-3.03	-3.01
748	5308.422	Cr II	43	4.07	0.254	-5.321	119	102	-1.91	-1.81
749	5308.680	Fe I	1091	4.26	0.073	-5.937	134	123	-2.57	-2.57
750	5310.684	Cr II	43	4.07	0.134	-5.604	98	89	-2.29	-2.20
751	5311.316	Zr I	27	0.52	0.005	-7.157	187	183	-1.30	-1.30
752	5311.453	Nd II	80	0.99	0.021	-6.473	165	159	-0.62	-0.55
753	5311.625	Hf II	37	1.78	0.034	-6.214	139	133	-0.07	0.06
754	5311.762	Zr II	95	1.76	0.008	-6.912	134	128	-1.83	-1.79
755	5312.641	Co I	197	4.21	0.072	-5.947	134	124		-0.03
756	5312.852	Cr I	225	3.45	0.209	-5.450	151	134	-0.53	-0.51
757	5313.582	Cr II	43	4.07	0.354	-5.223	137	113	-1.68	-1.63
758	5315.066	Fe I	1147	4.37	0.362	-5.203	175	147	-1.57	-1.56
759	5318.348	Sc II	22	1.36	0.121	-5.644	153	143	-1.74	-1.65
760	5318.758	Cr I	225	3.44	0.172	-5.556	146	132	-0.65	-0.65
761	5319.809	Nd II	75	0.55	0.117	-5.803	190	180	-0.24	-0.25
762	5320.027	Fe I	877	3.64	0.220	-5.458	163	148	-2.59	-2.59
763	5320.832	Y II	20	1.08	0.055	-6.036	156	148	-1.75	-1.67
764	5321.105	Fe I	1165	4.43	0.437	-5.089	193	156	-1.35	-1.31
765	5322.047	Fe I	112	2.28	0.643	-4.924	320	251	-2.89	-2.89
766	5322.816	Pr II	35	0.48	0.018	-6.364	173	168	-0.65	-0.40
767	5325.266	Co I	192	4.02	0.092	-5.786	140	130		-0.03
768	5325.547	Fe II	49	3.22	0.450	-5.069	183	145	-3.42	-3.32
769	5325.937	Co I	194	4.21	0.039	-6.166	131	122		-0.26
770	5326.809	Fe I	1147	4.41	0.133	-5.626	138	126	-2.13	-2.07

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
771	5329.137	Cr I	94	2.91	0.632	-4.883	285	213	-0.05	0.02
772	5329.781	Cr I	94	2.91	0.321	-5.239	177	156	-0.79	-0.73
773	5329.984	Fe I	1028	4.07	0.598	-4.977	264	197	-1.30	-1.39
774	5330.547	Ce II	13	0.87	0.041	-6.239	168	161	-0.37	-0.35
775	5334.867	Cr II	43	4.05	0.337	-5.211	139	114	-1.71	-1.64
776	5336.156	Co I	191	4.02	0.034	-6.275	134	126		-0.52
777	5336.789	Ti II	69	1.57	0.693	-4.868	363	265	-1.64	-1.64
778	5339.215	Ca II	20	8.44	0.067	-5.949	28	19	-0.16	-0.24
779	5340.437	Cr I	225	3.44	0.154	-5.580	144	131	-0.71	-0.68
780	5342.699	Co I	190	4.02	0.331	-5.233	175	151	0.67	0.62
781	5344.457	Mn I		5.38	0.085	-5.779	116	97	0.48	0.52
782	5344.754	Cr I	225	3.45	0.089	-5.827	137	126	-0.97	-0.95
783	5345.805	Cr I	18	1.00	0.830	-4.664	521	347	-0.83	-0.87
784	5346.078	Cr II	24	3.83	0.088	-5.728	97	89	-2.72	-2.56
785	5347.711	Ni I	145	3.80	0.058	-6.017	135	127	-2.02	-1.98
786	5348.051	Mn I	36	3.38	0.043	-6.094	141	133	-1.74	-1.65
787	5348.320	Cr I	18	1.00	0.784	-4.737	488	338	-1.29	-1.17
788	5349.086	Co I		4.15	0.043	-6.180	133	124	-0.33	-0.33
789	5350.090	Zr II	115	1.83	0.055	-6.075	138	131	-0.90	-0.87
790	5352.047	Co I	172	3.56	0.208	-5.378	163	149	0.01	-0.02
791	5352.402	Pr II		0.48	0.011	-6.649	173	167	-0.87	-0.69
792	5356.090	Sc I	17	1.86	0.019	-6.414	153	147	0.10	0.22
793	5357.180	Sc II	30	1.51	0.041	-6.195	141	134	-2.11	-2.11
794	5358.109	Fe I	628	3.30	0.107	-5.763	156	147	-3.29	-3.26
795	5359.195	Co I	194	4.15	0.103	-5.769	139	129	0.10	0.11
796	5361.613	Fe I	1143	4.41	0.425	-5.094	191	155	-1.39	-1.33
797	5373.703	Fe I	1166	4.47	0.615	-4.901	271	193	-0.83	-0.83
798	5376.824	Fe I	1132	4.29	0.174	-5.590	146	132	-2.10	-2.14
799	5377.047	La II	95	2.30	0.047	-6.186	127	120	0.72	0.70
800	5377.613	Mn I	42	3.84	0.385	-5.061	184	155	-0.03	-0.04
801	5379.570	Fe I	928	3.69	0.621	-4.925	287	215	-1.59	-1.58
802	5380.312	C I	11	7.68	0.158	-5.339	46	35	-1.87	-1.78
803	5384.629	Ti I	35	0.83	0.017	-6.585	179	174	-2.81	-2.82
804	5384.855	V II	53	2.27	0.013	-6.554	121	116		-2.42
805	5385.129	Zr I	26	0.52	0.020	-6.478	189	184	-0.67	-0.61

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
806	5385.570	Fe I	927	3.69	0.063	-6.063	144	136	-3.17	-3.22
807	5386.324	Fe I	1064	4.15	0.354	-5.237	178	152	-1.79	-1.81
808	5388.340	Ni I	70	1.93	0.148	-5.654	182	172	-3.34	-3.34
809	5388.500	Mn I	36	3.37	0.058	-5.983	143	135	-1.62	-1.55
810	5389.160	Ti I	35	0.81	0.054	-6.041	183	176	-2.33	-2.28
811	5389.480	Fe I	1145	4.41	0.719	-4.751	364	227	-0.38	-0.43
812	5392.324	Ni I	250	4.15	0.136	-5.648	138	126	-1.27	-1.25
813	5394.668	Mn I	1	0.00	0.480	-4.860	280	248		-3.57
814	5395.211	Fe I	1143	4.44	0.226	-5.433	151	133	-1.81	-1.81
815	5396.242	Ti II	80	1.58	0.122	-5.764	149	139	-3.15	-3.19
816	5397.613	Fe I	841	3.63	0.277	-5.344	173	155	-2.46	-2.44
817	5398.277	Fe I	1145	4.44	0.671	-4.848	315	212	-0.63	-0.68
818	5399.480	Mn I	42	3.85	0.256	-5.122	160	141	-0.21	-0.16
819	5401.262	Fe I	1146	4.32	0.273	-5.365	160	140	-1.81	-1.83
820	5402.770	Y II	35	1.84	0.139	-5.681	149	138	-0.58	-0.56
821	5406.773	Fe I	1148	4.37	0.388	-5.148	183	152	-1.51	-1.46
822	5412.781	Fe I	1162	4.43	0.205	-5.467	148	132	-1.88	-1.86
823	5413.680	Mn I	42	3.85	0.162	-5.415	147	133	-0.50	-0.50
824	5414.062	Fe II	48	3.22	0.290	-5.309	139	119	-3.80	-3.77
825	5417.031	Fe I	1148	4.41	0.361	-5.186	176	148	-1.53	-1.49
826	5418.773	Ti II	69	1.57	0.518	-5.046	245	198	-2.18	-2.17
827	5420.359	Mn I	4	2.13	0.390	-4.845	216	191	-1.42	-1.48
828	5422.145	Fe I	1145	4.32	0.115	-5.715	139	127	-2.29	-2.26
829	5425.246	Fe II	49	3.20	0.427	-5.085	179	143	-3.48	-3.36
830	5426.238	Ti I	3	0.02	0.075	-5.912	201	195	-2.94	-2.91
831	5432.535	Mn I	1	0.00	0.353	-5.084	250	230		-3.84
832	5432.953	Fe I	1143	4.43	0.646	-4.866	297	206	-0.74	-0.75
833	5435.852	Ni I	70	1.99	0.546	-5.054	274	226	-2.37	-2.40
834	5436.285	Fe I	1161	4.39	0.418	-5.140	191	156	-1.42	-1.43
835	5436.582	Fe I	113	2.28	0.481	-5.144	246	210	-3.34	-3.41
836	5437.187	Fe I	1145	4.31	0.211	-5.446	151	135	-1.97	-1.94
837	5438.027	Fe I	1237	4.59	0.026	-6.351	125	116	-2.73	-2.69
838	5438.293	Ti I	108	1.43	0.034	-6.258	169	163	-1.93	-1.91
839	5441.332	Fe I	1144	4.31	0.330	-5.198	172	147	-1.69	-1.60
840	5442.402	Cr I	204	3.42	0.093	-5.787	139	128	-0.98	-0.93

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
841	5443.398	Fe I	1059	4.10	0.034	-6.217	134	126	-3.07	-3.00
842	5448.906	Ti I	259	2.33	0.018	-6.560	150	143	-1.36	-1.36
843	5453.633	Ti I	108	1.44	0.054	-6.138	171	164	-1.71	-1.77
844	5454.574	Co I	195	4.05	0.136	-5.647	146	134	0.13	0.17
845	5460.492	Ti I	3	0.05	0.107	-5.844	204	196	-2.75	-2.83
846	5460.863	Fe I	464	3.07	0.091	-5.806	160	151	-3.58	-3.52
847	5461.543	Fe I	1145	4.44	0.272	-5.336	159	139	-1.69	-1.68
848	5462.488	Ni I	192	3.85	0.414	-5.090	196	162	-0.85	-0.73
849	5464.277	Fe I	1030	4.14	0.408	-5.155	193	161	-1.68	-1.68
850	5466.406	Fe I	1144	4.35	0.699	-4.819	350	227	-0.54	-0.67
851	5468.102	Ni I	192	3.85	0.140	-5.642	145	133	-1.54	-1.51
852	5470.086	Fe I	1144	4.44	0.268	-5.323	159	138	-1.70	-1.66
853	5470.637	Mn I	4	2.15	0.298	-5.026	199	180	-1.58	-1.69
854	5471.195	Ti I	106	1.44	0.088	-5.881	174	167	-1.49	-1.50
855	5472.285	Ce II	24	1.25	0.022	-6.475	158	151	-0.27	-0.23
856	5473.164	Fe I	1064	4.19	0.205	-5.466	153	138	-2.10	-2.08
857	5473.387	Y II	27	1.74	0.071	-5.961	143	135	-1.01	-0.97
858	5473.906	Fe I	1062	4.15	0.692	-4.845	346	233	-0.78	-0.89
859	5474.219	Ti I	108	1.46	0.117	-5.765	177	168	-1.33	-1.35
860	5474.449	Ti I	259	2.34	0.038	-6.194	152	145	-1.01	-0.98
861	5475.426	Ni I	159	3.83	0.048	-6.058	135	127	-2.07	-1.99
862	5480.516	Cr I	204	3.43	0.123	-5.785	143	131	-0.86	-0.91
863	5483.094	Fe I	1061	4.15	0.485	-5.074	218	174	-1.49	-1.51
864	5483.352	Co I	39	1.71	0.353	-5.082	226	204	-1.37	-1.42
865	5484.621	Sc I	16	1.85	0.031	-6.216	155	149	0.32	0.42
866	5487.141	Fe I	1143	4.41	0.370	-5.185	180	150	-1.50	-1.48
867	5489.848	Fe I	1148	4.44	0.142	-5.586	141	128	-2.06	-1.99
868	5490.145	Ti I	107	1.46	0.244	-5.447	193	178	-0.94	-0.98
869	5491.824	Fe I	1031	4.19	0.130	-5.650	144	132	-2.35	-2.30
870	5494.461	Fe I	1024	4.07	0.282	-5.319	168	148	-2.02	-1.99
871	5494.875	Ni I	231	4.10	0.207	-5.434	150	134	-1.09	-1.03
872	5496.555	Fe I	1281	4.91	0.103	-5.733	129	116	-1.78	-1.73
873	5499.402	Ni I	176	3.84	0.024	-6.397	133	125	-2.38	-2.34
874	5499.582	Fe I	1159	4.47	0.030	-6.294	128	119	-2.78	-2.74
875	5501.477	Fe I	15	0.95	0.816	-4.699	608	400	-2.99	-3.02

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
876	5502.086	Cr II	50	4.17	0.182	-5.463	107	95	-2.01	-1.91
877	5503.891	Ti I	287	2.58	0.156	-5.629	160	148	-0.11	-0.13
878	5506.480	Mo I	4	1.33	0.044	-6.160	185	179	0.16	0.20
879	5506.785	Fe I	15	0.99	0.825	-4.676	633	401	-2.82	-2.89
880	5507.766	V I	129	2.36	0.020	-6.419	170	156		-0.14
881	5508.617	Cr II	50	4.15	0.157	-5.540	104	92	-2.12	-2.03
882	5509.906	Y II	19	0.99	0.232	-5.440	189	171	-1.10	-1.06
883	5512.059	Ce II	24	1.01	0.079	-5.902	172	163	0.08	0.14
884	5514.797	Ni I	189	3.85	0.072	-5.866	138	129	-1.86	-1.76
885	5516.777	Mn I	4	2.18	0.247	-5.143	191	175	-1.76	-1.79
886	5517.070	Fe I	1109	4.19	0.193	-5.516	152	137	-2.14	-2.14
887	5517.531	Si I		5.08	0.119	-5.591	117	105	-2.57	-2.49
888	5520.484	Sc I	15	1.86	0.076	-5.884	160	152	0.74	0.78
889	5521.277	Fe I	1162	4.43	0.062	-6.058	132	122	-2.48	-2.53
890	5522.441	Fe I	1108	4.21	0.454	-5.108	208	168	-1.50	-1.52
891	5523.336	Co I	112	2.32	0.059	-5.709	172	165	-1.58	-1.58
892	5524.238	Fe I	1059	4.15	0.045	-6.147	135	127	-2.89	-2.88
893	5525.133	Fe II	56	3.25	0.112	-5.730	108	99	-4.33	-4.29
894	5526.809	Sc II	31	1.77	0.688	-4.847	369	267	0.21	0.25
895	5530.781	Co I	38	1.70	0.117	-5.587	191	182	-1.89	-2.04
896	5531.969	Fe I	1281	4.91	0.161	-5.509	137	120	-1.55	-1.47
897	5533.047	Mo I	4	1.34	0.026	-6.421	183	177	-0.07	-0.03
898	5534.840	Fe II	55	3.24	0.572	-4.965	257	190	-3.00	-2.98
899	5537.105	Ni I	188	3.85	0.034	-6.230	134	126	-2.21	-2.15
900	5537.762	Mn I	4	2.18	0.190	-5.237	183	171	-1.84	-1.90
901	5539.273	Fe I	871	3.64	0.187	-5.497	161	148	-2.68	-2.63
902	5539.805	Fe I	1130	4.29	0.079	-5.835	136	127	-2.49	-2.43
903	5543.195	Fe I	926	3.69	0.590	-4.949	277	212	-1.66	-1.62
904	5543.937	Fe I	1062	4.22	0.603	-4.917	278	203	-1.08	-1.06
905	5546.504	Fe I	1145	4.37	0.521	-5.013	231	178	-1.18	-1.18
906	5546.984	Fe I	1061	4.22	0.252	-5.337	161	142	-1.95	-1.88
907	5549.953	Fe I	926	3.69	0.117	-5.680	152	142	-2.87	-2.80
908	5551.969	Mn I		5.49	0.076	-5.852	115	97	0.54	0.55
909	5552.219	Sc II	25	1.45	0.044	-6.104	145	138	-2.13	-2.06
910	5552.687	Fe I	1281	4.95	0.082	-5.859	127	114	-1.85	-1.83

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
911	5557.066	Al I	6	3.14	0.042	-6.021	118	107	-2.57	-2.48
912	5559.629	Fe I	1282	4.99	0.077	-5.891	126	113	-1.84	-1.83
913	5560.211	Fe I	1164	4.43	0.529	-5.027	235	179	-1.10	-1.15
914	5568.863	Fe I	869	3.63	0.114	-5.784	153	143	-2.94	-2.97
915	5569.629	Fe I	686	3.40	0.811	-4.491	584	273	-0.26	-0.36
916	5574.383	Cr I		4.45	0.035	-6.211	137	110	-0.29	-0.38
917	5577.020	Fe I	1314	5.03	0.118	-5.663	130	115	-1.59	-1.54
918	5577.340	O I	3	1.96	0.026	-6.241	125	118	-8.07	-8.01
919	5578.719	Ni I	47	1.68	0.551	-5.006	288	238	-2.65	-2.56
920	5579.336	Fe I	1061	4.23	0.105	-5.822	141	130	-2.41	-2.45
921	5587.566	Fe I	1026	4.14	0.380	-5.199	189	159	-1.73	-1.74
922	5587.859	Ni I	70	1.93	0.583	-4.992	302	243	-2.32	-2.28
923	5589.355	Ni I	205	3.90	0.290	-5.302	169	147	-1.06	-1.03
924	5590.703	Co I	90	2.03	0.067	-5.658	179	172	-1.76	-1.80
925	5593.734	Ni I	206	3.90	0.426	-5.092	202	165	-0.76	-0.67
926	5595.047	Fe I	1314	5.06	0.065	-5.881	124	111	-1.85	-1.75
927	5604.937	V I	37	1.04	0.029	-6.191	178	172		-1.17
928	5606.996	Ni I	205	3.90	0.035	-6.243	134	126	-2.15	-2.12
929	5607.660	Fe I	1058	4.15	0.159	-5.562	149	136	-2.27	-2.23
930	5608.973	Fe I	1108	4.21	0.105	-5.691	141	131	-2.43	-2.32
931	5609.961	Fe I	866	3.64	0.053	-6.025	146	138	-3.30	-3.23
932	5610.246	Ce II	26	1.05	0.040	-6.136	167	160	-0.20	-0.07
933	5611.352	Fe I	869	3.63	0.101	-5.795	152	142	-3.00	-2.98
934	5618.629	Fe I	1107	4.21	0.511	-5.049	232	181	-1.36	-1.40
935	5619.219	Fe I	923	3.69	0.047	-6.152	145	137	-3.30	-3.31
936	5619.594	Fe I	1161	4.39	0.339	-5.221	176	149	-1.58	-1.55
937	5621.598	Si I		5.08	0.089	-5.742	115	104	-2.71	-2.65
938	5622.211	Si I	11	4.93	0.042	-6.042	112	104	-3.21	-3.11
939	5624.020	Fe I	1160	4.39	0.494	-5.059	223	174	-1.22	-1.25
940	5624.880	V I	37	1.05		-6.097		174		-1.05
941	5625.316	Ni I	221	4.09	0.402	-5.153	193	158	-0.63	-0.61
942	5626.027	V I	37	1.04		-6.194		171		-1.20
943	5627.484	Fe II	57	3.39	0.093	-5.842	104	95	-4.30	-4.26
944	5627.625	V I	37	1.08	0.209	-5.439	197	185		-0.32
945	5628.340	Ni I	215	4.09	0.153	-5.559	145	131	-1.26	-1.19

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
946	5628.641	Cr I	203	3.42	0.152	-5.587	148	135	-0.72	-0.69
947	5633.949	Fe I	1314	4.97	0.615	-4.887	280	185	-0.27	-0.37
948	5635.816	Fe I	1088	4.26	0.361	-5.214	184	155	-1.65	-1.65
949	5636.223	Ru I	10	1.06	0.049	-6.070	193	186	0.19	0.28
950	5636.695	Fe I	868	3.64	0.222	-5.486	168	152	-2.57	-2.61
951	5637.113	Ni I	218	4.09	0.350	-5.247	180	151	-0.74	-0.77
952	5638.262	Fe I	1087	4.22	0.669	-4.806	336	228	-0.77	-0.70
953	5638.746	Ni I	203	3.90	0.096	-5.779	141	131	-1.67	-1.62
954	5640.984	Sc II	29	1.50	0.366	-5.165	200	173	-0.94	-0.80
955	5641.879	Ni I	234	4.10	0.238	-5.356	157	139	-1.00	-0.92
956	5642.359	Cr I	239	3.86	0.056	-5.992	131	120	-0.79	-0.73
957	5642.621	Ni I	203	3.90	0.051	-5.996	136	128	-1.97	-1.85
958	5642.754	Fe I	1184	4.61	0.105	-5.779	135	123	-2.05	-2.05
959	5643.078	Ni I	259	4.16	0.160	-5.567	144	130	-1.17	-1.13
960	5644.352	Fe I	1057	4.15	0.020	-6.496	134	126	-3.26	-3.25
961	5645.605	Si I	10	4.93	0.300	-5.205	147	125	-2.17	-2.13
962	5646.109	V I	37	1.05	0.033	-6.139	179	173		-1.10
963	5646.684	Fe I	1109	4.26	0.080	-5.877	138	128	-2.51	-2.48
964	5647.234	Co I	112	2.28	0.122	-5.629	181	171	-1.45	-1.51
965	5648.262	Cr I	239	3.82	0.041	-6.098	130	119	-0.97	-0.89
966	5648.562	Ti I	269	2.49	0.109	-5.748	158	148	-0.37	-0.35
967	5649.387	Cr I	239	3.84	0.070	-5.898	133	121	-0.70	-0.65
968	5649.988	Fe I	1314	5.10	0.362	-5.165	172	136	-0.84	-0.82
969	5650.687	Fe I	1314	5.08	0.367	-5.134	174	138	-0.85	-0.79
970	5651.469	Fe I	1161	4.47	0.196	-5.511	150	133	-1.85	-1.87
971	5652.000	Fe I	1059	4.22	0.017	-6.531	132	125	-3.25	-3.21
972	5652.312	Fe I	1108	4.26	0.272	-5.334	166	145	-1.85	-1.83
973	5653.859	Fe I	1159	4.39	0.386	-5.186	188	156	-1.47	-1.49
974	5657.437	V I	37	1.06	0.052	-6.057	180	174		-1.01
975	5658.336	Sc II	29	1.50	0.314	-5.269	188	165	-1.05	-1.02
976	5660.516	Si I		5.61	0.096	-5.645	110	96	-2.15	-2.07
977	5660.676	Si I		5.61	0.125	-5.556	114	97	-2.02	-1.97
978	5660.797	Fe I	869	3.64	0.153	-5.630	158	147	-2.78	-2.78
979	5661.012	Fe I	1234	4.58	0.042	-6.147	129	119	-2.51	-2.48
980	5661.344	Fe I	1108	4.28	0.233	-5.391	159	141	-1.93	-1.89

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
981	5661.965	Fe I	1109	4.26	0.047	-6.092	135	126	-2.76	-2.72
982	5662.148	Ti I	249	2.32	0.233	-5.435	177	162	-0.13	-0.14
983	5664.586	Cr I		3.82	0.045	-6.046	130	120	-0.93	-0.82
984	5665.555	Si I	10	4.92	0.327	-5.160	152	128	-2.12	-2.07
985	5667.141	Sc II	29	1.50	0.277	-5.303	180	161	-1.13	-1.07
986	5668.371	V I	37	1.08	0.057	-5.999	180	173		-0.93
987	5669.031	Sc II	29	1.50	0.338	-5.228	194	169	-1.00	-0.95
988	5669.945	Ni I	250	4.26	0.175	-5.496	145	130	-1.02	-0.95
989	5670.848	V I	36	1.08	0.152	-5.482	191	181		-0.36
990	5671.812	Sc I	12	1.45	0.110	-5.616	173	164	0.52	0.69
991	5672.258	Fe I	1234	4.58	0.016	-6.578	126	118	-2.95	-2.93
992	5673.410	Ti I		3.11	0.024	-6.339	138	130	-0.48	-0.40
993	5677.684	Fe I	1057	4.10	0.071	-5.922	140	131	-2.72	-2.69
994	5678.383	Fe I	982	3.88	0.050	-6.047	142	134	-3.09	-3.04
995	5678.605	Fe I	113	2.42	0.025	-6.367	168	162	-4.79	-4.74
996	5679.027	Fe I	1183	4.65	0.556	-4.944	251	183	-0.78	-0.75
997	5679.918	Ti I	269	2.47	0.058	-6.030	153	146	-0.69	-0.67
998	5680.242	Fe I	1026	4.19	0.112	-5.709	144	133	-2.41	-2.36
999	5682.199	Ni I	232	4.10	0.494	-5.014	227	176	-0.39	-0.31
1000	5682.645	Na I	6	2.10	0.664	-4.742	295	202	-0.52	-0.60
1001	5684.187	Sc II	29	1.51	0.356	-5.182	198	172	-0.94	-0.87
1002	5684.484	Si I	11	4.95	0.490	-4.958	196	152	-1.70	-1.66
1003	5686.836	Sc I	12	1.44	0.085	-5.820	171	163	0.39	0.46
1004	5689.461	Ti I	249	2.30	0.131	-5.669	164	154	-0.46	-0.44
1005	5690.426	Si I	10	4.93	0.419	-5.024	174	140	-1.90	-1.82
1006	5694.738	Cr I	239	3.86	0.181	-5.493	146	129	-0.20	-0.17
1007	5694.984	Ni I	220	4.09	0.435	-5.134	205	165	-0.54	-0.57
1008	5698.023	Fe I	867	3.64	0.155	-5.641	159	147	-2.77	-2.79
1009	5698.530	V I	35	1.06		-5.226		196		-0.08
1010	5701.105	Si I	10	4.93	0.329	-5.160	153	129	-2.10	-2.05
1011	5701.551	Fe I	209	2.56	0.711	-4.823	414	297	-2.19	-2.16
1012	5702.645	Ti I	249	2.29	0.081	-5.889	159	151	-0.71	-0.69
1013	5703.559	V I	35	1.05	0.269	-5.347	208	192		-0.23
1014	5705.461	Fe I	1087	4.30	0.398	-5.147	194	161	-1.52	-1.50
1015	5707.258	Fe I	866	3.64	0.032	-6.260	145	138	-3.53	-3.47

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1016	5708.098	Fe I	1161	4.43	0.379	-5.181	187	155	-1.44	-1.44
1017	5708.398	Si I	10	4.95	0.567	-4.876	232	170	-1.47	-1.47
1018	5709.930	Fe I	1088	4.26	0.109	-5.701	142	131	-2.36	-2.28
1019	5711.094	Mg I	8	4.34	0.678	-4.658	315	216	-1.65	-1.48
1020	5712.777	Cr I	119	3.00	0.168	-5.614	158	145	-1.07	-1.11
1021	5713.879	Ti I	249	2.29	0.040	-6.144	155	148	-1.04	-0.97
1022	5716.453	Ti I	249	2.30	0.059	-5.992	157	150	-0.85	-0.82
1023	5719.816	Cr I	119	3.01	0.050	-6.084	144	136	-1.65	-1.63
1024	5720.895	Fe I	1178	4.55	0.142	-5.582	142	128	-1.95	-1.88
1025	5724.457	Fe I	1109	4.28	0.056	-6.001	136	126	-2.66	-2.60
1026	5725.645	V I	135	2.36	0.019	-6.429	152	146		-0.15
1027	5727.043	V I	35	1.08	0.309	-5.193	214	196		-0.02
1028	5727.652	V I	35	1.05	0.063	-5.861	182	175		-0.80
1029	5728.875	Y II	34	1.84	0.048	-6.135	141	133	-1.09	-1.06
1030	5729.199	Cr I	257	3.84	0.026	-6.368	129	118	-1.15	-1.15
1031	5731.254	V I	36	1.06	0.047	-5.803	180	174		-0.73
1032	5731.762	Fe I	1087	4.26	0.560	-4.972	262	196	-1.15	-1.15
1033	5732.293	Fe I	1313	4.99	0.143	-5.641	136	120	-1.53	-1.54
1034	5732.715	Fe II	57	3.39	0.030	-6.311	96	91	-4.82	-4.79
1035	5732.859	Fe I	1055	4.10	0.030	-6.284	136	129	-3.11	-3.06
1036	5733.887	Gd II	94	1.37	0.007	-6.913	151	146	-0.62	-0.51
1037	5737.062	V I	35	1.06	0.080	-5.793	184	176		-0.72
1038	5738.230	Fe I	1084	4.22	0.121	-5.674	145	133	-2.34	-2.29
1039	5738.547	Cr I	227	3.54	0.040	-6.267	135	125	-1.25	-1.32
1040	5739.469	Ti I	228	2.25	0.089	-5.852	161	153	-0.70	-0.69
1041	5739.980	Ti I	228	2.24	0.074	-5.926	160	152	-0.80	-0.78
1042	5741.848	Fe I	1086	4.26	0.318	-5.265	176	152	-1.74	-1.73
1043	5742.961	Fe I	1084	4.18	0.117	-5.736	145	134	-2.40	-2.40
1044	5743.434	V I	35	1.08	0.043	-5.957	180	173		-0.88
1045	5746.414	Cr I	243	3.85	0.034	-6.206	129	119	-1.03	-0.97
1046	5747.957	Fe I	1182	4.61	0.305	-5.276	168	142	-1.44	-1.42
1047	5748.355	Ni I	45	1.68	0.294	-5.297	214	195	-3.19	-3.12
1048	5749.309	Ni I	176	3.94	0.045	-6.093	135	127	-1.98	-1.92
1049	5752.035	Fe I	1180	4.55	0.528	-4.991	241	181	-0.95	-0.94
1050	5754.406	Fe I	866	3.64	0.134	-5.700	157	146	-2.84	-2.86

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1051	5754.660	Ni I	68	1.93	0.646	-4.909	358	275	-2.06	-1.98
1052	5759.258	Fe I	1184	4.65	0.087	-5.858	134	122	-2.10	-2.10
1053	5760.340	Fe I	867	3.64	0.246	-5.433	174	156	-2.51	-2.54
1054	5760.523	Fe I	1054	4.15	0.024	-6.432	135	127	-3.16	-3.17
1055	5760.828	Ni I	231	4.10	0.351	-5.209	183	153	-0.72	-0.69
1056	5766.328	Ti I	309	3.29	0.089	-5.792	142	132	0.29	0.35
1057	5772.145	Si I	17	5.08	0.406	-5.040	171	137	-1.77	-1.75
1058	5774.035	Ti I	309	3.30	0.101	-5.751	144	133	0.36	0.41
1059	5775.078	Fe I	1087	4.22	0.560	-4.965	264	199	-1.18	-1.16
1060	5778.457	Fe I	209	2.59	0.233	-5.458	191	176	-3.55	-3.57
1061	5781.750	Cr I	188	3.32	0.183	-5.508	156	141	-0.71	-0.69
1062	5782.133	Cu I	2	1.64	0.430	-4.911	248	216	-1.62	-1.81
1063	5783.066	Cr I	188	3.32	0.319	-5.229	179	154	-0.37	-0.31
1064	5783.859	Cr I	188	3.32	0.385	-5.172	194	162	-0.22	-0.21
1065	5784.379	V I	141	2.77	0.014	-6.555	144	138		0.11
1066	5784.664	Fe I	686	3.40	0.275	-5.376	183	164	-2.66	-2.69
1067	5784.973	Cr I	188	3.32	0.321	-5.287	179	155	-0.36	-0.39
1068	5785.980	Ti I	309	3.32	0.121	-5.713	146	134	0.47	0.47
1069	5787.922	Cr I	188	3.32	0.461	-5.088	218	175	-0.05	-0.06
1070	5793.070	Si I	9	4.93	0.347	-5.124	159	133	-2.05	-1.98
1071	5793.914	Fe I	1086	4.22	0.351	-5.219	186	157	-1.70	-1.69
1072	5797.859	Si I	9	4.95	0.336	-5.161	157	131	-2.06	-2.03
1073	5798.512	Cr I	17	1.03	0.017	-6.569	180	174	-4.03	-4.01
1074	5804.043	Fe I	959	3.88	0.244	-5.397	170	152	-2.28	-2.26
1075	5804.465	Fe I	1087	4.28	0.198	-5.465	155	139	-2.02	-1.98
1076	5805.219	Ni I	234	4.17	0.393	-5.130	194	159	-0.55	-0.48
1077	5806.723	Fe I	1180	4.61	0.501	-5.025	230	175	-0.96	-0.96
1078	5807.785	Fe I	552	3.29	0.082	-5.888	158	150	-3.42	-3.40
1079	5807.980	Fe I	1178	4.61	0.032	-6.255	128	119	-2.60	-2.56
1080	5809.211	Fe I	982	3.88	0.456	-5.077	222	182	-1.79	-1.73
1081	5809.875	Fe I	1084	4.28	0.021	-6.449	133	125	-3.11	-3.06
1082	5811.906	Fe I	1022	4.14	0.119	-5.753	147	135	-2.43	-2.45
1083	5812.824	Ti I	309	3.32	0.024	-6.403	135	127	-0.28	-0.26
1084	5814.812	Fe I	1086	4.28	0.236	-5.407	162	143	-1.92	-1.90
1085	5819.984	V II	99	2.52	0.032	-6.215	122	116		-1.82

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1086	5823.152	Fe II	164	5.57	0.020	-6.486	56	51	-3.10	-3.08
1087	5824.414	Fe II	58	3.42	0.029	-6.318	96	91	-4.81	-4.77
1088	5826.641	Fe I	1084	4.26	0.028	-6.318	134	126	-2.99	-2.95
1089	5827.867	Fe I	552	3.28	0.119	-5.725	163	153	-3.24	-3.23
1090	5830.680	V I	142	3.11	0.022	-6.276	139	132		0.72
1091	5832.477	Ti I	309	3.34	0.021	-6.465	135	127	-0.32	-0.31
1092	5835.094	Fe I	1084	4.26	0.144	-5.659	148	135	-2.22	-2.23
1093	5835.418	Fe I	1313	5.06	0.063	-5.905	126	114	-1.86	-1.77
1094	5835.566	Fe I	343	2.83	0.051	-6.054	164	157	-4.07	-4.02
1095	5837.699	Fe I	1129	4.29	0.101	-5.808	142	131	-2.37	-2.37
1096	5838.375	Fe I	959	3.94	0.185	-5.514	160	145	-2.38	-2.36
1097	5838.672	Cr I	119	3.01	0.041	-6.153	144	136	-1.74	-1.69
1098	5842.359	Nd II	86	1.28	0.011	-6.767	161	156	-0.63	-0.56
1099	5843.199	Cr I	119	3.01	0.021	-6.451	143	135	-2.03	-2.00
1100	5844.598	Cr I	119	3.01	0.043	-6.172	145	137	-1.72	-1.71
1101	5844.922	Fe I	1056	4.15	0.034	-6.242	137	129	-3.01	-2.97
1102	5845.285	Fe I	1313	5.03	0.065	-5.967	126	113	-1.88	-1.87
1103	5846.250	V I	142	3.13	0.032	-6.197	140	132		0.82
1104	5847.000	Ni I	44	1.68	0.226	-5.470	203	189	-3.35	-3.35
1105	5849.684	Fe I	922	3.69	0.082	-5.885	151	142	-3.04	-3.02
1106	5852.215	Fe I	1178	4.55	0.392	-5.145	193	157	-1.28	-1.25
1107	5853.148	Fe I	35	1.48	0.078	-5.918	194	187	-5.19	-5.17
1108	5853.684	Ba II	2	0.60	0.650	-4.975	461	329		-0.85
1109	5854.312	Sc II	21	1.36	0.032	-6.229	149	142	-2.34	-2.27
1110	5855.082	Fe I	1179	4.61	0.223	-5.448	155	136	-1.64	-1.65
1111	5856.086	Fe I	1128	4.29	0.341	-5.233	183	155	-1.65	-1.64
1112	5857.754	Ni I	228	4.17	0.459	-5.048	218	171	-0.39	-0.31
1113	5858.773	Fe I	1084	4.22	0.131	-5.646	147	135	-2.30	-2.25
1114	5859.230	Fe I	1084	4.30	0.039	-6.164	135	126	-2.81	-2.75
1115	5859.586	Fe I	1181	4.55	0.619	-4.883	305	210	-0.60	-0.63
1116	5861.109	Fe I	1084	4.28	0.083	-5.854	140	130	-2.47	-2.43
1117	5862.359	Fe I	1180	4.55	0.660	-4.802	342	223	-0.39	-0.39
1118	5864.238	Fe I	1086	4.30	0.065	-6.009	138	128	-2.57	-2.59
1119	5866.453	Ti I	72	1.07	0.460	-5.108	254	219	-0.85	-0.83
1120	5867.566	Ca I	46	2.93	0.221	-5.390	154	136	-1.61	-1.59

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1121	5873.211	Fe I	1087	4.26	0.167	-5.557	152	138	-2.13	-2.11
1122	5873.758	Si I		4.93	0.055	-5.954	116	108	-3.07	-3.01
1123	5876.273	Fe I	1084	4.30	0.045	-6.141	136	127	-2.74	-2.72
1124	5879.484	Fe I	1201	4.61	0.098	-5.758	137	125	-2.08	-2.02
1125	5880.020	Fe I	1201	4.56	0.117	-5.710	140	128	-2.03	-2.01
1126	5880.266	Ti I	71	1.05	0.066	-5.979	183	177	-2.00	-1.98
1127	5881.281	Fe I	1178	4.61	0.146	-5.590	143	129	-1.88	-1.82
1128	5883.820	Fe I	982	3.96	0.580	-4.925	286	214	-1.35	-1.27
1129	5884.437	Cr I	119	3.01	0.031	-6.238	144	136	-1.86	-1.78
1130	5885.625	Zr I	2	0.07	0.005	-7.126	201	196	-1.73	-1.70
1131	5899.297	Ti I	72	1.05	0.326	-5.311	220	200	-1.15	-1.19
1132	5902.469	Fe I	1234	4.59	0.143	-5.659	143	129	-1.90	-1.92
1133	5903.312	Ti I	71	1.07	0.049	-6.112	182	175	-2.11	-2.10
1134	5905.672	Fe I	1181	4.65	0.533	-4.982	249	184	-0.81	-0.81
1135	5906.492	Ti I	105	1.46	0.052	-6.072	174	167	-1.71	-1.68
1136	5916.270	Fe I	170	2.44	0.555	-5.035	294	238	-2.95	-2.98
1137	5918.535	Ti I	71	1.07	0.131	-5.692	190	181	-1.65	-1.64
1138	5922.117	Ti I	72	1.05	0.200	-5.500	200	187	-1.44	-1.43
1139	5927.785	Fe I	1175	4.65	0.410	-5.131	199	160	-1.14	-1.13
1140	5928.863	V II	98	2.52	0.045	-6.068	125	118		-1.67
1141	5929.680	Fe I	1176	4.55	0.387	-5.175	193	158	-1.29	-1.30
1142	5930.180	Fe I	1180	4.65	0.669	-4.798	357	224	-0.20	-0.29
1143	5933.801	Fe I	1198	4.64	0.060	-5.945	132	121	-2.28	-2.20
1144	5934.656	Fe I	982	3.93	0.619	-4.879	318	230	-1.21	-1.14
1145	5935.379	Co I	55	1.88	0.018	-6.433	180	175		-2.71
1146	5937.801	Ti I	72	1.07	0.073	-5.922	184	177	-1.93	-1.89
1147	5940.980	Fe I	1083	4.18	0.186	-5.520	157	142	-2.15	-2.14
1148	5941.750	Ti I	72	1.05	0.155	-5.594	194	184	-1.58	-1.55
1149	5947.527	Fe I	1199	4.61	0.084	-5.834	136	125	-2.15	-2.10
1150	5948.539	Si I	16	5.08	0.577	-4.839	250	177	-1.24	-1.23
1151	5953.148	Ti I	154	1.89	0.309	-5.279	202	182	-0.36	-0.33
1152	5956.699	Fe I	14	0.86	0.538	-5.087	313	265	-4.58	-4.64
1153	5965.832	Ti I	154	1.88	0.270	-5.369	195	178	-0.46	-0.46
1154	5969.566	Fe I	1086	4.28	0.041	-6.154	136	128	-2.80	-2.75
1155	5975.816	Ce II	30	1.33	0.011	-6.812	159	153	-0.50	-0.49

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1156	5976.164	Fe I	1125	4.29	0.016	-6.578	134	126	-3.22	-3.18
1157	5976.781	Fe I	959	3.94	0.573	-4.952	287	216	-1.37	-1.34
1158	5978.543	Ti I	154	1.87	0.241	-5.423	191	175	-0.54	-0.54
1159	5978.891	Si II	4	10.07	0.043	-5.970	11	5	0.14	0.29
1160	5982.855	Cr I	185	3.17	0.034	-6.246	142	134	-1.67	-1.64
1161	5983.687	Fe I	1175	4.55	0.592	-4.906	292	207	-0.68	-0.68
1162	5984.824	Fe I	1260	4.73	0.635	-4.810	325	213	-0.30	-0.26
1163	5987.066	Fe I	1260	4.79	0.570	-4.897	273	193	-0.53	-0.46
1164	5991.359	Fe II	46	3.15	0.295	-5.266	155	132	-3.80	-3.71
1165	5996.730	Ni I	249	4.23	0.188	-5.469	152	136	-1.00	-0.93
1166	5999.656	Ti I	227	2.24	0.071	-5.959	162	154	-0.81	-0.81
1167	6000.656	Co I	169	3.62	0.030	-6.163	147	140		-0.80
1168	6003.016	Fe I	959	3.88	0.647	-4.831	350	246	-1.10	-1.00
1169	6007.312	Ni I	42	1.68	0.266	-5.407	212	195	-3.24	-3.27
1170	6007.961	Fe I	1178	4.65	0.542	-4.972	259	190	-0.76	-0.77
1171	6008.562	Fe I	982	3.88	0.664	-4.820	368	253	-1.00	-0.94
1172	6013.488	Mn I	27	3.07	0.566	-4.823	290	225		-0.22
1173	6015.242	Fe I	63	2.22	0.046	-6.176	177	170	-4.71	-4.73
1174	6016.641	Mn I	27	3.07	0.627	-4.769	336	247		-0.10
1175	6018.301	Fe I	1176	4.65	0.089	-5.871	136	125	-2.08	-2.10
1176	6019.363	Fe I	780	3.57	0.049	-6.040	151	143	-3.39	-3.30
1177	6021.801	Mn I	27	3.07	0.668	-4.750	377	266		-0.05
1178	6025.762	Ni I	251	4.23	0.043	-6.098	132	123	-1.74	-1.65
1179	6027.051	Fe I	1018	4.07	0.597	-4.958	305	223	-1.14	-1.23
1180	6027.719	Fe I	1312	4.99	0.025	-6.318	124	114	-2.34	-2.25
1181	6030.656	Mo I	5	1.53	0.009	-6.841	181	176	-0.35	-0.30
1182	6034.031	Fe I	1142	4.31	0.083	-5.882	141	131	-2.44	-2.43
1183	6035.340	Fe I	1125	4.29	0.061	-6.018	139	129	-2.61	-2.60
1184	6039.301	Ni I	248	4.23	0.020	-6.428	130	122	-2.07	-1.99
1185	6039.727	V I	34	1.06	0.131	-5.698	192	183		-0.61
1186	6043.379	Ce II	30	1.21	0.016	-6.514	164	158	-0.45	-0.30
1187	6049.512	Eu II		1.28	0.006	-6.969	152	147	-0.80	-0.68
1188	6053.461	Cr II	105	4.74	0.042	-6.087	82	76	-2.23	-2.12
1189	6053.684	Ni I	247	4.23	0.183	-5.515	152	136	-1.01	-0.98
1190	6054.078	Fe I	1142	4.37	0.092	-5.809	142	131	-2.33	-2.29

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1191	6056.008	Fe I	1259	4.73	0.609	-4.886	307	208	-0.41	-0.47
1192	6058.180	V I	34	1.04	0.021	-6.382	181	175		-1.36
1193	6062.680	Cr I	185	3.19	0.048	-6.052	144	136	-1.49	-1.41
1194	6064.633	Ti I	69	1.05	0.083	-5.874	187	179	-1.88	-1.86
1195	6065.488	Fe I	207	2.61	0.754	-4.677	539	331	-1.48	-1.46
1196	6067.605	Si I	15	5.08	0.025	-6.265	112	104	-3.29	-3.21
1197	6078.496	Fe I	1259	4.79	0.612	-4.871	310	207	-0.33	-0.38
1198	6079.008	Fe I	1176	4.65	0.434	-5.091	211	167	-1.06	-1.04
1199	6081.441	V I	34	1.05	0.129	-5.680	192	183		-0.60
1200	6082.348	Co I	169	3.50	0.061	-5.667	154	146	-0.45	-0.39
1201	6082.715	Fe I	64	2.22	0.363	-5.253	229	203	-3.60	-3.62
1202	6084.102	Fe II	46	3.20	0.203	-5.462	134	118	-4.01	-3.96
1203	6086.281	Ni I	249	4.26	0.395	-5.121	200	163	-0.44	-0.36
1204	6086.676	Co I	165	3.41	0.024	-6.268	151	145		-1.09
1205	6089.570	Fe I	1327	5.02	0.351	-5.214	180	145	-0.91	-0.93
1206	6090.215	V I	34	1.08	0.323	-5.267	223	202		-0.10
1207	6091.180	Ti I	238	2.27	0.148	-5.631	171	160	-0.42	-0.42
1208	6092.801	Ti I	153	1.89	0.039	-6.205	166	159	-1.42	-1.40
1209	6093.148	Co I	37	1.74	0.066	-5.856	189	182	-2.23	-2.27
1210	6093.645	Fe I	1177	4.61	0.300	-5.304	173	147	-1.43	-1.44
1211	6094.371	Fe I	1177	4.65	0.189	-5.480	151	134	-1.69	-1.64
1212	6096.664	Fe I	959	3.98	0.358	-5.193	198	168	-1.90	-1.85
1213	6097.082	Fe I	64	2.18	0.024	-6.456	176	170	-5.04	-5.05
1214	6098.246	Fe I	1200	4.56	0.155	-5.605	148	133	-1.88	-1.88
1215	6098.660	Ti I	304	3.06	0.053	-6.061	145	137	-0.16	-0.14
1216	6102.180	Fe I	1259	4.83	0.624	-4.822	322	210	-0.22	-0.20
1217	6105.129	Fe I	1175	4.55	0.113	-5.776	142	130	-2.06	-2.09
1218	6105.762	Ni I		4.23	0.023	-6.418	131	123	-2.02	-1.98
1219	6106.598	Si I	30	5.61	0.072	-5.784	111	99	-2.29	-2.19
1220	6106.824	Fe I	208	2.61	0.017	-6.476	167	161	-4.78	-4.66
1221	6107.082	Fe I	1081	4.26	0.013	-6.704	135	127	-3.33	-3.33
1222	6107.328	Ca I		2.71	0.014	-6.592	134	127	-3.14	-3.08
1223	6108.121	Ni I	45	1.68	0.592	-5.012	340	269	-2.45	-2.51
1224	6111.078	Ni I	230	4.09	0.318	-5.236	182	154	-0.78	-0.72
1225	6111.652	V I	34	1.04	0.084	-5.746	188	180		-0.68

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1226	6112.934	Si I		5.61	0.069	-5.771	110	98	-2.31	-2.18
1227	6113.113	Si I	30	5.61	0.028	-6.218	106	95	-2.72	-2.65
1228	6113.320	Fe II	46	3.22	0.111	-5.707	116	106	-4.33	-4.26
1229	6114.793	Zr II	93	1.66	0.012	-6.701	145	139	-1.71	-1.66
1230	6116.988	Co I		1.78	0.052	-6.075	187	180	-2.49	-2.45
1231	6117.191	Ca I		2.71	0.026	-6.287	136	128	-2.86	-2.77
1232	6118.098	Ni I	230	4.09	0.024	-6.364	133	126	-2.13	-2.05
1233	6119.531	V I	34	1.06	0.232	-5.531	207	192		-0.41
1234	6119.531	Y I	34	1.06	0.222	-5.475	203	187	1.31	1.34
1235	6119.766	Ni I	244	4.26	0.107	-5.725	141	129	-1.26	-1.20
1236	6120.254	Fe I	14	0.91	0.052	-6.091	205	199	-5.93	-5.91
1237	6121.004	Ti I	153	1.88	0.037	-6.243	166	159	-1.45	-1.45
1238	6125.027	Si I	30	5.61	0.228	-5.320	133	111	-1.67	-1.66
1239	6126.219	Ti I	69	1.07	0.222	-5.465	205	191	-1.36	-1.37
1240	6127.477	Zr I	2	0.15	0.018	-6.486	202	197	-1.09	-0.98
1241	6128.977	Ni I	42	1.68	0.262	-5.414	213	196	-3.25	-3.27
1242	6129.223	Cr II	105	4.75	0.022	-6.341	79	74	-2.50	-2.37
1243	6129.703	Fe II	46	3.20	0.044	-6.047	106	100	-4.80	-4.66
1244	6130.137	Ni I	248	4.26	0.215	-5.465	158	139	-0.88	-0.89
1245	6131.574	Si I	30	5.59	0.177	-5.516	125	107	-1.84	-1.91
1246	6131.855	Si I	30	5.61	0.183	-5.378	126	107	-1.80	-1.72
1247	6133.965	Ni I	229	4.09	0.048	-6.058	136	128	-1.81	-1.73
1248	6134.570	Zr I	2	0.00	0.016	-6.494	205	200	-1.28	-1.13
1249	6135.363	V I	34	1.05	0.088	-5.802	188	180		-0.73
1250	6136.621	Fe I	169	2.45	0.768	-4.644	584	338	-1.42	-1.48
1251	6136.996	Fe I	62	2.20	0.611	-4.985	349	272	-2.96	-3.03
1252	6140.457	Zr I	24	0.52	0.006	-6.969	193	189	-1.21	-1.10
1253	6142.488	Si I	30	5.62	0.261	-5.203	139	114	-1.57	-1.48
1254	6143.180	Zr I	2	0.07	0.016	-6.558	203	199	-1.22	-1.13
1255	6145.016	Si I	29	5.61	0.293	-5.172	146	118	-1.50	-1.44
1256	6145.410	Fe I	685	3.37	0.029	-6.338	153	147	-3.81	-3.79
1257	6146.211	Ti I	153	1.87	0.030	-6.357	166	159	-1.56	-1.58
1258	6149.246	Fe II	74	3.89	0.347	-5.184	164	132	-2.95	-2.85
1259	6150.137	V I	20	0.30	0.072	-5.814	201	194		-1.48
1260	6151.621	Fe I	62	2.18	0.507	-5.102	283	235	-3.31	-3.37

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1261	6154.223	Na I	5	2.10	0.289	-5.201	160	138	-1.55	-1.50
1262	6156.785	O I	10	10.74	0.039	-6.042	10	4	-0.39	-0.39
1263	6157.402	Fe I	624	3.30	0.030	-6.295	155	148	-3.87	-3.82
1264	6157.727	Fe I	1015	4.07	0.570	-4.994	293	218	-1.22	-1.32
1265	6158.172	O I	10	10.74	0.028	-6.072	7	1	-0.55	-0.42
1266	6159.379	Fe I	1175	4.61	0.116	-5.697	142	129	-1.98	-1.94
1267	6160.746	Na I	5	2.10	0.428	-5.032	193	157	-1.22	-1.22
1268	6161.297	Ca I	20	2.52	0.532	-4.967	256	199	-1.21	-1.30
1269	6163.754	Ca I	20	2.52	0.531	-4.986	256	198	-1.22	-1.32
1270	6165.359	Fe I	1018	4.14	0.443	-5.121	225	182	-1.53	-1.56
1271	6166.434	Ca I	20	2.52	0.582	-4.918	288	215	-1.03	-1.19
1272	6173.066	Eu II	9	1.32	0.006	-7.005	152	147	-0.76	-0.68
1273	6173.340	Fe I	62	2.22	0.622	-4.950	361	279	-2.88	-2.90
1274	6175.371	Ni I	217	4.09	0.457	-5.082	229	180	-0.44	-0.42
1275	6176.816	Ni I	228	4.09	0.533	-4.975	268	200	-0.21	-0.14
1276	6177.250	Ni I	58	1.83	0.146	-5.667	192	182	-3.43	-3.44
1277	6177.551	Ni I	244	4.23	0.020	-6.429	131	123	-2.08	-1.97
1278	6179.379	Fe II	163	5.57	0.034	-6.083	62	57	-2.84	-2.66
1279	6180.059	Ni I		4.07	0.042	-6.119	136	128	-1.89	-1.81
1280	6186.711	Ni I	229	4.10	0.277	-5.321	173	150	-0.87	-0.84
1281	6187.398	Fe I	342	2.83	0.035	-6.201	165	158	-4.24	-4.16
1282	6187.992	Fe I	959	3.94	0.433	-5.094	224	184	-1.75	-1.68
1283	6188.984	Co I	37	1.71	0.056	-5.745	189	183	-2.26	-2.19
1284	6191.187	Ni I	45	1.68	0.628	-4.928	378	291	-2.28	-2.21
1285	6191.562	Fe I	169	2.43	0.762	-4.660	579	341	-1.47	-1.54
1286	6199.191	V I	19	0.29	0.094	-5.728	204	197		-1.39
1287	6199.504	Fe I	208	2.56	0.039	-6.212	171	164	-4.46	-4.44
1288	6200.320	Fe I	207	2.61	0.631	-4.927	367	277	-2.43	-2.44
1289	6204.605	Ni I	226	4.09	0.203	-5.477	159	142	-1.08	-1.06
1290	6209.723	Fe I	981	3.96	0.011	-6.703	141	134	-3.68	-3.61
1291	6213.437	Fe I	62	2.22	0.668	-4.872	413	306	-2.62	-2.58
1292	6213.863	V I	20	0.30	0.041	-6.149	198	192		-1.84
1293	6216.355	V I	19	0.28	0.293	-5.239	234	216		-0.85
1294	6219.289	Fe I	62	2.20	0.697	-4.834	456	326	-2.41	-2.39
1295	6220.477	Ti I	293	2.68	0.089	-5.870	157	148	-0.28	-0.29

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1296	6220.777	Fe I	958	3.88	0.176	-5.548	164	150	-2.45	-2.44
1297	6221.680	Fe I	13	0.86	0.019	-6.608	203	198	-6.44	-6.49
1298	6223.984	Ni I	228	4.10	0.258	-5.364	170	148	-0.92	-0.90
1299	6224.504	V I	20	0.29	0.053	-6.091	200	193		-1.79
1300	6226.738	Fe I	981	3.88	0.271	-5.335	181	160	-2.19	-2.16
1301	6229.227	Fe I	342	2.84	0.365	-5.268	222	194	-2.98	-3.04
1302	6230.094	Ni I	227	4.10	0.178	-5.517	155	140	-1.14	-1.10
1303	6232.645	Fe I	816	3.65	0.641	-4.851	365	258	-1.29	-1.22
1304	6233.191	V I	20	0.28	0.038	-6.189	199	193		-1.90
1305	6237.320	Si I	28	5.61	0.397	-4.992	174	133	-1.23	-1.12
1306	6238.387	Fe II	74	3.87	0.365	-5.176	173	139	-2.90	-2.84
1307	6239.363	Sc I	2	0.00	0.063	-5.944	201	195	-1.15	-1.07
1308	6239.937	Fe II	74	3.89	0.115	-5.723	106	95	-3.70	-3.61
1309	6240.309	Fe I	1015	4.14	0.152	-5.620	156	143	-2.28	-2.28
1310	6240.648	Fe I	64	2.22	0.488	-5.111	276	231	-3.31	-3.35
1311	6242.820	V I	19	0.26	0.076	-5.875	203	196		-1.58
1312	6243.113	V I	19	0.30	0.241	-5.375	224	210		-1.00
1313	6243.816	Si I	28	5.61	0.342	-5.114	159	125	-1.37	-1.34
1314	6244.113	Si I	28	5.61	0.040	-6.123	108	98	-2.56	-2.54
1315	6244.473	Si I	27	5.61	0.331	-5.121	156	124	-1.39	-1.35
1316	6245.613	Sc II	28	1.51	0.302	-5.280	197	173	-1.03	-0.99
1317	6246.324	Fe I	816	3.60	0.716	-4.703	475	288	-0.72	-0.73
1318	6247.559	Fe II	74	3.89	0.473	-5.052	224	169	-2.55	-2.51
1319	6251.219	Fe I	1176	4.61	0.014	-6.551	130	122	-2.95	-2.85
1320	6251.824	V I	19	0.29	0.113	-5.671	207	198		-1.35
1321	6252.559	Fe I	169	2.40	0.741	-4.703	541	343	-1.73	-1.70
1322	6253.832	Fe I	1256	4.73	0.169	-5.587	149	133	-1.67	-1.70
1323	6256.898	V I	19	0.28	0.024	-6.389	197	192		-2.11
1324	6257.578	Co I		3.71	0.023	-6.411	147	140	-1.00	-0.95
1325	6258.105	Ti I	104	1.44	0.494	-5.090	272	228	-0.37	-0.40
1326	6258.711	Ti I	104	1.46	0.520	-4.997	285	235	-0.28	-0.16
1327	6261.105	Ti I	104	1.43	0.446	-5.146	253	217	-0.50	-0.53
1328	6265.141	Fe I	62	2.18	0.678	-4.863	432	316	-2.57	-2.56
1329	6266.320	V I	20	0.28	0.024	-6.375	197	192		-2.08
1330	6270.227	Fe I	342	2.86	0.501	-5.071	274	224	-2.63	-2.64

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1331	6271.281	Fe I	685	3.33	0.229	-5.467	183	166	-2.83	-2.86
1332	6271.773	Ni I		3.31	0.035	-6.218	150	143	-2.69	-2.64
1333	6272.629	Ni I	244	4.26	0.034	-6.201	133	124	-1.81	-1.72
1334	6274.656	V I	19	0.27	0.070	-5.936	202	196		-1.64
1335	6279.746	Sc II	28	1.50	0.254	-5.381	186	167	-1.16	-1.15
1336	6280.621	Fe I	13	0.86	0.612	-5.005	380	304	-4.30	-4.37
1337	6285.164	V I	19	0.28	0.095	-5.848	205	197		-1.53
1338	6290.547	Fe I	208	2.59	0.042	-6.215	171	164	-4.40	-4.41
1339	6290.969	Fe I	1258	4.73	0.528	-4.979	263	192	-0.68	-0.69
1340	6292.816	V I	19	0.29		-5.765		195		-1.44
1341	6293.930	Fe I	1260	4.81	0.114	-5.702	140	127	-1.80	-1.76
1342	6296.492	V I	19	0.30	0.083	-6.000	203	196		-1.68
1343	6297.801	Fe I	62	2.22	0.649	-4.916	399	300	-2.70	-2.74
1344	6300.312	O I	1	0.00	0.038	-6.166	183	176	-9.74	-9.76
1345	6300.684	Sc II	28	1.51	0.056	-6.048	152	145	-1.95	-1.93
1346	6301.512	Fe I	816	3.65	0.719	-4.663	489	286	-0.58	-0.56
1347	6302.504	Fe I	816	3.69	0.650	-4.841	381	264	-1.16	-1.14
1348	6303.461	Fe I	1140	4.32	0.045	-6.119	139	130	-2.72	-2.67
1349	6303.766	Ti I	104	1.44	0.075	-5.930	180	173	-1.55	-1.54
1350	6311.500	Fe I	342	2.83	0.280	-5.373	202	183	-3.18	-3.21
1351	6312.242	Ti I	104	1.46	0.077	-5.967	180	172	-1.52	-1.56
1352	6315.816	Fe I	1014	4.07	0.399	-5.194	214	177	-1.70	-1.75
1353	6316.578	Ni I	248	4.15	0.031	-6.247	135	127	-1.94	-1.87
1354	6318.703	Mg I	23	5.11	0.288	-5.177	155	129	-2.02	-1.96
1355	6319.238	Mg I	23	5.11	0.192	-5.386	138	119	-2.28	-2.24
1356	6320.414	La II	19	0.17	0.038	-6.097	189	182	-1.38	-1.18
1357	6320.836	Sc II	28	1.50	0.070	-5.914	155	147	-1.85	-1.79
1358	6322.168	Ni I	249	4.15	0.158	-5.578	152	138	-1.16	-1.13
1359	6322.687	Fe I	207	2.59	0.634	-4.910	379	285	-2.39	-2.37
1360	6325.148	Ti I	1	0.02	0.014	-6.593	202	197	-3.69	-3.61
1361	6326.844	V I	84	1.87	0.017	-6.550	166	160		-0.73
1362	6327.605	Ni I	44	1.68	0.360	-5.226	239	212	-3.02	-2.98
1363	6330.098	Cr I	6	0.94	0.267	-5.396	219	202	-2.78	-2.80
1364	6330.848	Fe I	1254	4.73	0.317	-5.283	180	150	-1.26	-1.29
1365	6335.336	Fe I	62	2.20	0.712	-4.796	495	341	-2.22	-2.23

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1366	6336.102	Ti I	103	1.44	0.054	-6.112	178	171	-1.70	-1.73
1367	6336.832	Fe I	816	3.69	0.698	-4.751	454	283	-0.75	-0.81
1368	6338.875	Fe I	1258	4.79	0.396	-5.168	203	162	-1.00	-1.04
1369	6347.090	Si II	2	8.09	0.304	-5.059	96	68	0.05	0.31
1370	6347.836	Co I	200	4.39	0.034	-6.196	136	128	-0.08	-0.09
1371	6349.469	V I	84	1.85	0.011	-6.757	166	160		-0.96
1372	6351.266	Fe I	1140	4.31	0.024	-6.387	137	129	-3.00	-2.96
1373	6353.836	Fe I	13	0.91	0.014	-6.629	202	197	-6.53	-6.46
1374	6360.816	Ni I	229	4.15	0.157	-5.578	152	138	-1.16	-1.13
1375	6362.352	Zn I	6	5.79	0.192	-5.420	123	106	0.03	0.15
1376	6363.785	O I	1	0.02	0.018	-6.548	181	175	-10.05	-10.13
1377	6364.367	Fe I	1253	4.79	0.256	-5.385	165	142	-1.35	-1.38
1378	6364.699	Fe I	1229	4.58	0.116	-5.706	144	132	-2.01	-1.97
1379	6366.484	Ni I	230	4.17	0.220	-5.396	163	144	-0.94	-0.87
1380	6369.457	Fe II	40	2.89	0.172	-5.501	138	124	-4.38	-4.28
1381	6370.344	Ni I	127	3.54	0.121	-5.761	158	147	-1.88	-1.91
1382	6375.207	Ni I		4.16	0.018	-6.482	133	126	-2.19	-2.10
1383	6378.254	Ni I	247	4.15	0.278	-5.307	176	152	-0.81	-0.76
1384	6380.742	Fe I	1015	4.19	0.473	-5.076	244	192	-1.38	-1.39
1385	6383.711	Fe II		5.55	0.089	-5.768	75	66	-2.36	-2.25
1386	6385.445	Fe II		5.55	0.035	-6.203	64	59	-2.83	-2.76
1387	6385.719	Fe I	1253	4.73	0.099	-5.761	140	128	-1.94	-1.89
1388	6390.480	La II	33	0.32	0.024	-6.358	184	177	-1.44	-1.30
1389	6392.539	Fe I	109	2.28	0.172	-5.618	195	183	-4.01	-4.05
1390	6393.609	Fe I	168	2.42	0.745	-4.699	569	344	-1.55	-1.65
1391	6411.109	Fe I	1256	4.73	0.048	-6.087	133	123	-2.29	-2.26
1392	6411.656	Fe I	816	3.65	0.717	-4.651	501	287	-0.52	-0.51
1393	6414.590	Ni I	244	4.15	0.157	-5.603	153	139	-1.16	-1.15
1394	6416.918	Fe II	74	3.89	0.358	-5.186	175	140	-2.88	-2.82
1395	6417.695	Ca I		4.44	0.090	-5.703	122	102	-0.61	-0.55
1396	6417.879	Co I	111	2.32	0.091	-5.620	183	175	-1.49	-1.46
1397	6419.078	Ti I	196	2.17	0.015	-6.566	160	154	-1.59	-1.50
1398	6419.957	Fe I	1258	4.73	0.623	-4.857	347	224	-0.20	-0.33
1399	6424.859	Ni I	227	4.15	0.111	-5.722	146	134	-1.34	-1.29
1400	6429.895	Co I	81	2.14	0.025	-6.268	179	173		-2.30

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1401	6430.852	Fe I	62	2.18	0.725	-4.760	535	352	-2.03	-2.08
1402	6432.680	Fe II	40	2.89	0.364	-5.186	194	159	-3.82	-3.76
1403	6436.406	Fe I	1016	4.19	0.094	-5.820	148	138	-2.48	-2.46
1404	6440.934	Mn I	39	3.77	0.050	-6.060	144	136	-1.28	-1.23
1405	6442.941	Fe II		5.55	0.035	-6.196	65	59	-2.82	-2.74
1406	6445.750	Zr I	57	1.00	0.009	-6.845	186	181	-0.58	-0.51
1407	6446.406	Fe II	199	6.22	0.037	-6.186	56	50	-2.23	-2.21
1408	6450.180	Co I	37	1.70	0.158	-5.160	205	193	-1.62	-1.58
1409	6452.312	V I	48	1.19	0.049	-5.932	183	177		-0.74
1410	6454.996	Co I	174	3.63	0.089	-5.681	158	148	-0.32	-0.26
1411	6455.602	Ca I	19	2.52	0.489	-5.056	246	194	-1.30	-1.42
1412	6456.383	Fe II	74	3.90	0.524	-4.990	270	196	-2.30	-2.28
1413	6464.672	Ca I	19	2.52	0.113	-5.757	152	141	-2.35	-2.37
1414	6475.633	Fe I	206	2.56	0.499	-5.084	285	234	-2.91	-2.94
1415	6477.855	Co I	174	3.77	0.030	-6.255	148	141	-0.73	-0.73
1416	6481.875	Fe I	109	2.28	0.573	-5.006	337	266	-2.95	-2.99
1417	6482.195	Fe II	199	6.22	0.058	-5.948	61	53	-2.00	-1.88
1418	6482.805	Ni I	66	1.98	0.363	-5.212	237	209	-2.71	-2.66
1419	6491.238	Fe II		5.58	0.022	-6.365	62	57	-3.01	-2.90
1420	6494.500	Fe I	1255	4.73	0.261	-5.314	169	145	-1.39	-1.32
1421	6494.992	Fe I	168	2.40	0.753	-4.603	604	343	-1.39	-1.35
1422	6495.746	Fe I	1253	4.83	0.344	-5.221	189	155	-1.08	-1.08
1423	6496.469	Fe I	1258	4.79	0.521	-4.982	268	194	-0.61	-0.62
1424	6496.910	Ba II	2	0.60	0.781	-4.828	764	385		-0.30
1425	6498.941	Fe I	13	0.96	0.442	-5.174	286	249	-4.67	-4.70
1426	6508.836	Ca I	18	2.52	0.083	-5.854	148	139	-2.50	-2.48
1427	6509.605	Fe I	1012	4.07	0.034	-6.320	144	136	-3.07	-3.11
1428	6516.082	Fe II	40	2.89	0.456	-5.054	241	188	-3.55	-3.43
1429	6518.371	Fe I	342	2.83	0.510	-5.068	289	233	-2.60	-2.64
1430	6529.184	Cr I	265	3.89	0.015	-6.584	132	123	-1.35	-1.29
1431	6531.426	V I	48	1.22	0.049	-6.073	183	176		-0.86
1432	6532.883	Ni I	64	1.93	0.149	-5.642	194	183	-3.32	-3.31
1433	6533.937	Fe I	1197	4.56	0.338	-5.228	192	160	-1.35	-1.34
1434	6537.926	Cr I	16	1.00	0.032	-6.287	186	181	-3.78	-3.74
1435	6572.793	Ca I	1	0.00	0.290	-5.415	226	208	-4.26	-4.37

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1436	6574.254	Fe I	13	0.99	0.293	-5.400	243	224	-4.96	-5.03
1437	6580.234	Ni I	265	4.40	0.083	-5.854	139	128	-1.24	-1.21
1438	6581.211	Fe I	34	1.48	0.178	-5.553	213	201	-4.77	-4.75
1439	6583.695	Si I		5.95	0.099	-5.608	116	98	-1.77	-1.68
1440	6586.320	Ni I	64	1.95	0.368	-5.211	241	212	-2.73	-2.68
1441	6587.621	C I	22	8.53	0.083	-5.589	41	31	-1.38	-1.26
1442	6591.309	Fe I	1229	4.59	0.096	-5.833	143	132	-2.09	-2.10
1443	6592.512	Ni I	248	4.23	0.176	-5.492	157	141	-1.01	-0.94
1444	6593.875	Fe I	168	2.43	0.646	-4.866	416	306	-2.39	-2.30
1445	6595.863	Co I	174	3.71	0.037	-6.117	151	143		-0.64
1446	6598.602	Ni I	249	4.23	0.214	-5.431	164	145	-0.90	-0.85
1447	6599.109	Ti I	49	0.90	0.086	-5.917	194	186	-2.01	-2.05
1448	6604.590	Sc II	19	1.36	0.315	-5.251	211	184	-1.13	-1.07
1449	6606.949	Ti II	91	2.06	0.067	-5.957	143	135	-2.96	-2.92
1450	6608.027	Fe I	109	2.28	0.171	-5.611	196	184	-4.00	-4.04
1451	6609.117	Fe I	206	2.56	0.563	-5.017	332	260	-2.68	-2.75
1452	6612.199	Cr I	282	4.16	0.027	-6.286	131	120	-0.82	-0.74
1453	6613.746	Y II	26	1.75	0.044	-6.200	151	143	-1.19	-1.19
1454	6613.824	Fe I	13	1.01	0.057	-6.133	206	200	-5.79	-5.85
1455	6624.840	V I	48	1.22		-6.423		173		-1.24
1456	6625.023	Fe I	13	1.01	0.149	-5.678	218	208	-5.33	-5.35
1457	6627.227	Fe II	210	7.27	0.013	-6.645	38	33	-1.82	-1.76
1458	6627.547	Fe I	1174	4.55	0.252	-5.386	172	149	-1.58	-1.59
1459	6630.008	Cr I	16	1.03	0.056	-6.041	189	183	-3.49	-3.45
1460	6632.445	Co I	111	2.28	0.058	-5.928	181	174	-1.82	-1.83
1461	6633.410	Fe I	1258	4.83	0.236	-5.381	164	141	-1.36	-1.32
1462	6633.754	Fe I	1197	4.56	0.525	-5.000	280	205	-0.80	-0.84
1463	6634.117	Fe I	1258	4.77	0.276	-5.311	174	148	-1.30	-1.28
1464	6635.129	Ni I	264	4.42	0.205	-5.429	160	140	-0.74	-0.68
1465	6636.348	Cr I	282	4.14	0.014	-6.618	129	119	-1.11	-1.06
1466	6639.695	Fe I	1195	4.61	0.180	-5.567	157	140	-1.73	-1.77
1467	6639.875	Fe I	1007	4.07	0.121	-5.677	156	144	-2.46	-2.41
1468	6645.098	Eu II	8	1.38	0.035	-6.236	159	152	0.09	0.17
1469	6646.937	Fe I	206	2.61	0.094	-5.831	179	171	-3.99	-3.97
1470	6653.855	Fe I	1052	4.15	0.091	-5.879	150	140	-2.53	-2.56

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1471	6661.082	Cr I	282	4.19	0.110	-5.732	141	126	-0.12	-0.11
1472	6661.328	Ni I	246	4.23	0.062	-5.930	140	130	-1.54	-1.45
1473	6663.445	Fe I	111	2.42	0.635	-4.934	408	303	-2.45	-2.56
1474	6667.422	Fe I	168	2.45	0.051	-6.130	177	170	-4.44	-4.45
1475	6667.719	Fe I	1228	4.58	0.081	-5.884	142	131	-2.18	-2.16
1476	6669.273	Cr I	282	4.17	0.050	-6.050	134	122	-0.52	-0.48
1477	6677.996	Fe I	268	2.69	0.735	-4.663	585	332	-1.17	-1.28
1478	6678.820	Co I	54	1.96	0.037	-5.989	185	179		-2.18
1479	6680.141	Cr I	282	4.16	0.064	-5.938	136	123	-0.42	-0.37
1480	6687.496	Y I	1	0.00	0.033	-6.245	200	194	-0.66	-0.57
1481	6696.027	Al I	5	3.14	0.263	-5.273	161	138	-1.58	-1.56
1482	6696.312	Fe I	1255	4.83	0.132	-5.617	146	131	-1.69	-1.62
1483	6698.668	Al I	5	3.14	0.156	-5.502	142	127	-1.90	-1.86
1484	6699.137	Fe I	1228	4.59	0.071	-5.898	141	130	-2.23	-2.17
1485	6703.566	Fe I	268	2.76	0.349	-5.259	227	199	-3.07	-3.08
1486	6704.480	Fe I	1052	4.22	0.054	-6.062	145	135	-2.72	-2.70
1487	6707.785	Li I	1	0.00	0.010	-6.571	171	166	-0.01	0.02
1488	6709.891	Ca I	45	2.93	0.021	-6.465	135	127	-2.74	-2.74
1489	6710.316	Fe I	34	1.48	0.145	-5.697	209	199	-4.88	-4.91
1490	6713.047	Fe I	1195	4.61	0.225	-5.445	166	146	-1.60	-1.61
1491	6713.195	Fe I	1013	4.14	0.090	-5.821	151	141	-2.55	-2.50
1492	6713.742	Fe I	1255	4.79	0.190	-5.493	157	138	-1.53	-1.51
1493	6716.238	Fe I	1225	4.58	0.134	-5.647	150	136	-1.92	-1.89
1494	6716.672	Ti I	273	2.49	0.018	-6.597	156	150	-1.20	-1.23
1495	6721.844	Si I	38	5.86	0.269	-5.149	147	117	-1.28	-1.15
1496	6725.359	Fe I	1052	4.10	0.155	-5.592	162	148	-2.30	-2.27
1497	6726.672	Fe I	1197	4.61	0.404	-5.132	219	175	-1.12	-1.10
1498	6732.066	Fe I	1225	4.58	0.072	-5.930	141	131	-2.24	-2.21
1499	6733.156	Fe I	1195	4.64	0.239	-5.390	169	146	-1.53	-1.51
1500	6736.527	Fe I	1122	4.29	0.016	-6.560	139	132	-3.18	-3.15
1501	6737.980	Fe I	1192	4.56	0.189	-5.522	160	143	-1.75	-1.76
1502	6739.520	Fe I	34	1.56	0.108	-5.783	202	194	-4.94	-4.94
1503	6741.633	Si I		5.98	0.101	-5.610	117	99	-1.73	-1.65
1504	6743.129	Ti I	48	0.90	0.158	-5.588	204	193	-1.71	-1.67
1505	6745.102	Fe I	1227	4.58	0.078	-5.935	142	132	-2.20	-2.22

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1506	6745.555	Ti I	226	2.24	0.027	-6.367	162	156	-1.25	-1.23
1507	6745.965	Fe I	1005	4.07	0.060	-6.005	148	139	-2.80	-2.78
1508	6746.957	Fe I	205	2.61	0.039	-6.237	173	167	-4.41	-4.41
1509	6750.152	Fe I	111	2.42	0.617	-4.953	394	296	-2.53	-2.63
1510	6751.445	Cr I	315	5.28	0.016	-6.485	114	100	0.04	0.10
1511	6752.711	Fe I	1195	4.64	0.314	-5.259	188	158	-1.32	-1.31
1512	6753.465	Fe I	1196	4.56	0.054	-6.010	139	129	-2.39	-2.33
1513	6762.363	Zr I	1	0.00	0.017	-6.542	208	203	-1.27	-1.18
1514	6764.094	Fe I	1225	4.59	0.021	-6.415	134	126	-2.80	-2.71
1515	6767.781	Ni I	57	1.83	0.633	-4.915	424	315	-1.92	-1.92
1516	6772.316	Ni I	127	3.66	0.424	-5.124	239	193	-0.89	-0.86
1517	6783.266	Fe I	206	2.56	0.024	-6.438	173	167	-4.67	-4.66
1518	6786.422	Fe I	551	3.24	0.038	-6.169	161	154	-3.81	-3.72
1519	6786.863	Fe I	1052	4.19	0.220	-5.441	173	154	-2.01	-1.99
1520	6793.262	Fe I	1005	4.07	0.116	-5.748	157	145	-2.48	-2.48
1521	6794.613	Fe I	1279	4.95	0.036	-6.151	131	120	-2.21	-2.12
1522	6796.121	Fe I	1007	4.14	0.089	-5.790	151	141	-2.55	-2.47
1523	6798.473	Ca I	31	2.71	0.047	-6.032	143	134	-2.58	-2.49
1524	6801.863	Fe I	34	1.61	0.016	-6.688	191	185	-5.79	-5.84
1525	6804.277	Fe I	1225	4.58	0.130	-5.667	150	137	-1.94	-1.91
1526	6806.844	Fe I	268	2.73	0.321	-5.330	221	196	-3.16	-3.22
1527	6810.266	Fe I	1197	4.61	0.421	-5.113	228	180	-1.06	-1.06
1528	6814.949	Co I	54	1.96	0.122	-5.583	197	187	-1.78	-1.75
1529	6820.367	Fe I	1197	4.64	0.346	-5.212	199	164	-1.23	-1.22
1530	6824.844	Fe I	1280	4.99	0.030	-6.313	130	120	-2.26	-2.24
1531	6828.598	Fe I	1195	4.64	0.466	-5.075	251	191	-0.89	-0.94
1532	6833.234	Fe I	1194	4.64	0.082	-5.833	142	131	-2.11	-2.05
1533	6837.012	Fe I	1225	4.59	0.159	-5.578	155	140	-1.82	-1.80
1534	6839.832	Fe I	205	2.56	0.274	-5.361	213	193	-3.44	-3.43
1535	6841.344	Fe I	1195	4.61	0.509	-5.037	278	204	-0.77	-0.87
1536	6842.035	Ni I	126	3.66	0.224	-5.418	178	159	-1.40	-1.36
1537	6842.691	Fe I	1197	4.64	0.333	-5.232	195	162	-1.27	-1.25
1538	6843.656	Fe I	1173	4.55	0.490	-5.027	266	200	-0.90	-0.90
1539	6848.566	Si I	37	5.86	0.114	-5.561	120	103	-1.80	-1.69
1540	6851.641	Fe I	34	1.61	0.038	-6.247	193	187	-5.39	-5.39

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1541	6854.820	Fe I	1224	4.59	0.113	-5.779	148	135	-2.00	-2.03
1542	6855.164	Fe I	1195	4.56	0.556	-4.959	314	222	-0.62	-0.70
1543	6855.715	Fe I	1194	4.61	0.149	-5.582	153	138	-1.83	-1.78
1544	6857.250	Fe I	1006	4.07	0.199	-5.488	171	154	-2.18	-2.17
1545	6858.148	Fe I	1173	4.61	0.428	-5.094	232	182	-1.04	-1.01
1546	6860.102	Fe I	1255	4.83	0.026	-6.347	132	123	-2.47	-2.42
1547	6861.242	Ni I	293	5.36	0.032	-6.267	122	108	-0.75	-0.75
1548	6861.453	Ti I	237	2.27	0.060	-6.051	166	159	-0.85	-0.87
1549	6861.937	Fe I	109	2.42	0.171	-5.584	196	183	-3.86	-3.86
1550	6862.496	Fe I	1191	4.56	0.265	-5.349	178	153	-1.52	-1.52
1551	6864.312	Fe I	1186	4.56	0.055	-6.029	140	130	-2.38	-2.34
1552	6875.992	Fe I	1013	4.19	0.078	-5.890	150	140	-2.56	-2.53
1553	6880.633	Fe I	1051	4.15	0.120	-5.722	156	145	-2.39	-2.38
1554	6882.516	Cr I	222	3.44	0.266	-5.320	182	159	-0.33	-0.28
1555	6883.059	Cr I	222	3.44	0.257	-5.365	181	157	-0.35	-0.35
1556	6898.293	Fe I	1078	4.22	0.140	-5.643	159	145	-2.24	-2.22
1557	6914.566	Ni I	62	1.95	0.554	-4.995	350	275	-2.16	-2.11
1558	6916.684	Fe I	1052	4.15	0.454	-5.088	254	200	-1.41	-1.41
1559	6925.273	Cr I	222	3.45	0.313	-5.246	195	166	-0.19	-0.15
1560	6926.090	Cr I	222	3.45	0.157	-5.525	161	147	-0.64	-0.55
1561	6933.020	Fe I	1051	4.19	0.120	-5.755	156	144	-2.35	-2.38
1562	6936.496	Fe I	1196	4.61	0.059	-6.027	140	130	-2.30	-2.30
1563	6945.211	Fe I	111	2.42	0.627	-4.915	422	311	-2.40	-2.43
1564	6951.246	Fe I	1186	4.56	0.409	-5.135	227	180	-1.13	-1.14
1565	6955.035	Ni I	157	3.70	0.120	-5.741	160	148	-1.72	-1.73
1566	6960.320	Fe I	1222	4.59	0.109	-5.766	148	136	-2.02	-2.02
1567	6970.469	Fe I	463	3.02	0.047	-6.095	168	160	-3.92	-3.86
1568	6971.937	Fe I	404	3.02	0.113	-5.768	177	167	-3.50	-3.50
1569	6973.512	Ni I		5.30	0.019	-6.423	121	109	-1.04	-0.97
1570	6976.504	Si I	60	5.95	0.272	-5.210	151	119	-1.16	-1.15
1571	6976.926	Fe I	1221	4.58	0.149	-5.616	155	140	-1.86	-1.85
1572	6978.398	Cr I	222	3.46	0.459	-5.076	253	197	0.23	0.20
1573	6978.859	Fe I	111	2.48	0.613	-4.931	406	302	-2.42	-2.47
1574	6979.797	Cr I	222	3.46	0.275	-5.299	186	160	-0.28	-0.22
1575	6980.937	Cr I	222	3.46	0.068	-5.951	148	139	-1.05	-1.03

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1576	6988.527	Fe I	167	2.40	0.308	-5.335	226	203	-3.52	-3.54
1577	6996.656	Ti I	256	2.33	0.026	-6.447	162	155	-1.18	-1.23
1578	6999.895	Fe I	1051	4.10	0.439	-5.113	249	198	-1.49	-1.51
1579	7000.617	Fe I	1005	4.14	0.158	-5.621	164	150	-2.25	-2.27
1580	7001.547	Ni I	64	1.93	0.104	-5.799	191	182	-3.49	-3.48
1581	7003.570	Si I	60	5.96	0.364	-5.027	178	132	-0.89	-0.84
1582	7007.969	Fe I	1078	4.18	0.238	-5.402	180	159	-1.96	-1.94
1583	7010.352	Fe I	1221	4.58	0.109	-5.754	149	136	-2.02	-2.01
1584	7014.984	Fe I	167	2.45	0.071	-5.996	182	174	-4.28	-4.30
1585	7017.301	Si I	51	5.87	0.091	-5.729	117	102	-1.90	-1.87
1586	7017.660	Si I	51	5.87	0.252	-5.224	147	119	-1.30	-1.23
1587	7022.387	Fe I	1078	4.30	0.101	-5.712	152	141	-2.33	-2.22
1588	7022.957	Fe I	1051	4.19	0.506	-5.005	289	218	-1.17	-1.14
1589	7024.066	Fe I	1003	4.07	0.244	-5.434	183	162	-2.05	-2.09
1590	7024.645	Fe I	1187	4.56	0.362	-5.212	210	172	-1.26	-1.28
1591	7024.875	Ni I	271	4.54	0.168	-5.521	155	138	-0.73	-0.67
1592	7030.020	Ni I	126	3.54	0.180	-5.549	173	158	-1.65	-1.64
1593	7034.375	Ni I	97	3.54	0.087	-5.849	158	148	-2.03	-2.00
1594	7034.906	Si I	50	5.87	0.403	-4.989	194	142	-0.86	-0.82
1595	7038.223	Fe I	1051	4.22	0.480	-5.028	272	209	-1.24	-1.18
1596	7044.637	Fe I	1276	4.95	0.107	-5.746	143	129	-1.68	-1.66
1597	7054.027	Co I	140	2.72	0.038	-6.094	172	166		-1.56
1598	7057.953	Fe I	815	3.65	0.032	-6.334	154	147	-3.48	-3.51
1599	7062.973	Ni I	64	1.95	0.123	-5.706	194	184	-3.39	-3.36
1600	7068.023	Fe I	1276	4.99	0.043	-6.157	133	123	-2.08	-2.07
1601	7068.418	Fe I	1004	4.07	0.488	-5.061	280	215	-1.35	-1.40
1602	7069.086	Ti I	307	3.18	0.026	-6.434	146	139	-0.37	-0.40
1603	7069.535	Fe I	205	2.56	0.043	-6.150	177	170	-4.40	-4.36
1604	7070.070	Sr I	3	1.85	0.013	-6.719	149	142	-0.14	-0.14
1605	7072.812	Fe I	1003	4.07	0.049	-6.070	149	140	-2.90	-2.84
1606	7077.117	Eu II	8	1.25	0.006	-6.910	161	155	-0.82	-0.64
1607	7079.348	Fe I	1278	4.91	0.043	-6.170	134	124	-2.15	-2.16
1608	7083.395	Fe I	1277	4.91	0.189	-5.513	158	138	-1.40	-1.41
1609	7084.621	Al I		4.02	0.081	-5.708	128	108	-1.33	-1.28
1610	7084.977	Co I	54	1.87	0.415	-5.078	275	236	-1.14	-1.14

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1611	7085.473	C I		8.64	0.012	-6.642	26	22	-2.21	-2.31
1612	7090.391	Fe I	1051	4.23	0.508	-5.005	292	219	-1.11	-1.10
1613	7102.887	Zr I	42	0.65	0.006	-7.135	196	191	-1.08	-1.14
1614	7107.465	Fe I	1005	4.19	0.204	-5.499	173	155	-2.05	-2.06
1615	7109.680	Fe I	1190	4.61	0.010	-6.800	135	127	-3.09	-3.09
1616	7110.906	Ni I	64	1.93	0.295	-5.293	229	206	-2.90	-2.82
1617	7111.449	C I	26	8.64	0.057	-5.768	38	30	-1.45	-1.35
1618	7112.176	Fe I	404	2.99	0.252	-5.385	204	184	-3.07	-3.05
1619	7113.168	C I	26	8.64	0.118	-5.405	54	40	-1.01	-0.86
1620	7114.555	Fe I	267	2.69	0.073	-5.965	178	170	-4.03	-4.04
1621	7116.973	C I		8.64	0.089	-5.586	46	36	-1.19	-1.11
1622	7118.094	Fe I	1278	5.01	0.112	-5.785	143	129	-1.60	-1.64
1623	7122.203	Ni I	126	3.54	0.639	-4.801	443	284	0.09	0.08
1624	7124.988	Fe I	815	3.69	0.017	-6.520	152	146	-3.72	-3.67
1625	7127.566	Fe I	1273	4.99	0.220	-5.426	164	141	-1.23	-1.22
1626	7130.926	Fe I	1051	4.22	0.588	-4.884	367	251	-0.71	-0.73
1627	7132.992	Fe I	1002	4.07	0.370	-5.230	222	184	-1.71	-1.77
1628	7138.902	Ti I	99	1.44	0.059	-6.080	183	176	-1.66	-1.69
1629	7142.523	Fe I	1274	4.95	0.291	-5.277	184	153	-1.06	-1.03
1630	7151.469	Fe I	109	2.48	0.206	-5.506	204	188	-3.69	-3.70
1631	7158.477	Fe I	815	3.65	0.110	-5.801	166	155	-2.90	-2.94
1632	7166.969	Ni I	109	3.74	0.111	-5.718	159	148	-1.72	-1.66
1633	7176.879	Fe I	1276	4.99	0.320	-5.246	192	157	-0.94	-0.94
1634	7179.996	Fe I	33	1.48	0.177	-5.619	218	205	-4.77	-4.82
1635	7181.199	Fe I	1078	4.22	0.475	-5.039	274	210	-1.24	-1.20
1636	7188.570	Ti I	99	1.43	0.046	-6.124	182	176	-1.78	-1.75
1637	7189.152	Fe I	463	3.07	0.334	-5.279	226	197	-2.78	-2.80
1638	7190.121	Fe I	463	3.11	0.112	-5.768	176	166	-3.41	-3.41
1639	7194.895	Fe I	1273	5.02	0.227	-5.401	166	142	-1.18	-1.15
1640	7208.223	Si I	25	5.62	0.039	-6.065	114	104	-2.54	-2.45
1641	7212.441	Fe I	1273	4.95	0.251	-5.345	173	147	-1.17	-1.14
1642	7214.734	Ti II	101	2.59	0.176	-5.496	158	142	-1.94	-1.86
1643	7216.195	Ti I	98	1.44	0.139	-5.667	195	184	-1.23	-1.24
1644	7216.676	Fe I	1273	5.01	0.133	-5.649	148	132	-1.50	-1.48
1645	7217.547	Eu II		1.23	0.017	-6.516	164	158	-0.38	-0.25

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1646	7219.684	Fe I	1001	4.07	0.400	-5.187	237	193	-1.62	-1.68
1647	7220.762	Ni I	294	5.36	0.056	-6.035	127	113	-0.49	-0.50
1648	7221.207	Fe I	1189	4.56	0.332	-5.242	203	168	-1.32	-1.32
1649	7222.395	Fe II	73	3.89	0.155	-5.596	126	111	-3.48	-3.46
1650	7224.473	Fe II	73	3.89	0.164	-5.539	128	113	-3.44	-3.38
1651	7225.055	Ni I		5.61	0.022	-6.406	123	106	-0.65	-0.65
1652	7226.207	Si I	26	5.61	0.256	-5.274	153	127	-1.54	-1.52
1653	7228.695	Fe I		2.76	0.233	-5.480	205	187	-3.34	-3.40
1654	7229.969	Pb I		2.65		-7.382		156		-0.69
1655	7235.336	Si I	26	5.61	0.256	-5.273	153	127	-1.54	-1.52
1656	7235.820	Si I	25	5.61	0.175	-5.483	136	117	-1.79	-1.81
1657	7243.086	Si I	15	8.04	0.026	-6.176	83	65	-0.38	-0.37
1658	7251.711	Ti I	99	1.43	0.289	-5.374	224	202	-0.81	-0.87
1659	7256.129	Fe I	1278	4.95	0.122	-5.691	147	132	-1.61	-1.59
1660	7260.992	Fe I	267	2.73	0.157	-5.663	191	178	-3.60	-3.65
1661	7268.559	Fe I	957	3.88	0.063	-5.997	156	147	-2.95	-2.93
1662	7284.840	Fe I	1004	4.14	0.348	-5.256	216	180	-1.69	-1.74
1663	7285.273	Fe I	1188	4.61	0.186	-5.465	164	146	-1.69	-1.62
1664	7285.980	Si I	58	5.96	0.034	-6.164	109	97	-2.28	-2.24
1665	7286.535	Ni I	109	3.77	0.034	-6.229	148	140	-2.25	-2.19
1666	7288.738	Fe I	1077	4.22	0.455	-5.048	265	206	-1.29	-1.21
1667	7301.168	Eu II		1.25	0.021	-6.502	164	158	-0.26	-0.22
1668	7301.559	Fe II	72	3.89	0.068	-5.914	106	98	-3.93	-3.85
1669	7306.570	Fe I	1077	4.18	0.335	-5.230	211	177	-1.69	-1.65
1670	7312.055	Fe I	1310	5.03	0.052	-6.085	135	123	-1.96	-1.96
1671	7316.770	Fe I	267	2.69	0.100	-5.859	183	174	-3.88	-3.92
1672	7327.648	Ni I	140	3.80	0.100	-5.793	157	146	-1.71	-1.69
1673	7338.973	V I	117	2.14	0.015	-6.471	166	160		-0.38
1674	7351.113	Fe I	1273	4.99	0.282	-5.291	183	152	-1.04	-1.01
1675	7351.520	Fe I	1275	4.95	0.351	-5.192	207	166	-0.88	-0.87
1676	7355.898	Cr I	93	2.89	0.492	-5.036	293	227	-0.19	-0.19
1677	7357.734	Ti I	97	1.44	0.187	-5.553	203	190	-1.07	-1.10
1678	7359.949	Fe I	1310	4.99	0.062	-6.039	137	125	-1.91	-1.95
1679	7362.285	Al I	11	4.02	0.159	-5.436	140	115	-0.99	-0.96
1680	7366.371	Fe I	1188	4.64	0.118	-5.753	151	138	-1.92	-1.95

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1681	7381.937	Ni I	292	5.36	0.145	-5.600	143	121	-0.01	-0.02
1682	7385.242	Ni I	84	2.74	0.381	-5.227	249	210	-1.87	-1.91
1683	7393.609	Ni I	109	3.61	0.578	-4.876	379	265	-0.21	-0.10
1684	7395.539	Si I		5.95	0.061	-5.828	114	101	-2.01	-1.90
1685	7396.508	Fe I	1278	4.99	0.098	-5.816	143	130	-1.68	-1.69
1686	7400.184	Cr I	93	2.90	0.532	-4.966	326	243	0.00	0.03
1687	7400.859	Fe I	204	2.61	0.031	-6.340	176	169	-4.51	-4.51
1688	7401.121	Ni I	291	5.36	0.111	-5.701	137	118	-0.16	-0.14
1689	7401.687	Fe I	1004	4.19	0.349	-5.255	217	181	-1.63	-1.69
1690	7405.785	Si I	23	5.61	0.514	-4.872	274	185	-0.64	-0.71
1691	7411.156	Fe I	1077	4.28	0.613	-4.813	419	264	-0.36	-0.41
1692	7415.957	Si I	22	5.61	0.502	-4.859	265	181	-0.69	-0.67
1693	7417.398	Co I	89	2.04	0.044	-5.831	188	182		-1.92
1694	7418.324	Fe I	1002	4.14	0.031	-6.295	147	139	-3.04	-3.01
1695	7418.668	Fe I	1001	4.14	0.406	-5.153	243	196	-1.52	-1.54
1696	7421.562	Fe I	1188	4.64	0.144	-5.651	156	141	-1.81	-1.82
1697	7422.281	Ni I	139	3.63	0.595	-4.874	402	272	-0.06	-0.07
1698	7430.539	Fe I	204	2.59	0.121	-5.758	189	178	-3.88	-3.90
1699	7437.059	Co I	53	1.96	0.017	-6.546	186	181	-2.81	-2.76
1700	7440.918	Fe I	1273	4.91	0.415	-5.064	238	183	-0.72	-0.63
1701	7442.230	N I	3	10.33	0.019	-6.462	14	9	-0.34	-0.43
1702	7443.023	Fe I	1002	4.19	0.296	-5.327	200	171	-1.77	-1.81
1703	7445.758	Fe I	1077	4.26	0.645	-4.730	477	265	-0.03	-0.17
1704	7447.395	Fe I	1273	4.95	0.266	-5.342	180	152	-1.12	-1.12
1705	7447.910	Fe I	1352	5.52	0.131	-5.639	142	123	-1.01	-1.00
1706	7449.336	Fe II	73	3.89	0.145	-5.629	125	111	-3.51	-3.49
1707	7454.000	Fe I	1001	4.19	0.100	-5.829	157	145	-2.43	-2.45
1708	7455.398	Si I		5.96	0.049	-5.997	112	100	-2.10	-2.06
1709	7461.523	Fe I	204	2.56	0.234	-5.467	211	192	-3.53	-3.57
1710	7463.391	Fe I	1307	5.06	0.070	-5.931	138	126	-1.78	-1.75
1711	7466.523	Ti I	142	1.74	0.040	-6.183	177	170	-1.55	-1.52
1712	7468.281	N I	3	10.33	0.028	-6.126	17	12	-0.14	-0.05
1713	7471.746	Fe I	267	2.73	0.021	-6.501	172	166	-4.56	-4.56
1714	7473.559	Fe I	1188	4.61	0.131	-5.660	155	141	-1.89	-1.86
1715	7476.375	Fe I	1251	4.79	0.140	-5.590	154	138	-1.68	-1.61

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1716	7479.695	Fe II	72	3.89	0.068	-5.915	108	100	-3.92	-3.82
1717	7481.477	Ni I	286	5.49	0.080	-5.882	131	113	-0.19	-0.22
1718	7481.738	Fe I	266	2.76	0.044	-6.190	175	168	-4.20	-4.21
1719	7481.934	Fe I	1250	4.79	0.098	-5.894	146	134	-1.87	-1.96
1720	7484.301	Fe I	1306	5.08	0.072	-5.919	138	126	-1.75	-1.72
1721	7488.703	Ni I	157	3.83	0.022	-6.365	146	139	-2.38	-2.28
1722	7491.078	Si I		5.96	0.021	-6.403	108	98	-2.48	-2.48
1723	7491.656	Fe I	1077	4.30	0.486	-5.024	291	219	-1.07	-1.06
1724	7495.074	Fe I	1077	4.22	0.661	-4.608	514	265	0.15	0.13
1725	7498.531	Fe I	1001	4.14	0.158	-5.611	168	153	-2.24	-2.24
1726	7501.266	Fe I	1002	4.19	0.030	-6.317	146	139	-3.01	-2.98
1727	7506.016	Fe I	1306	5.06	0.149	-5.620	152	135	-1.39	-1.40
1728	7507.266	Fe I	1137	4.41	0.438	-5.072	259	201	-1.14	-1.09
1729	7515.832	Fe II	73	3.90	0.112	-5.718	117	106	-3.65	-3.60
1730	7521.039	Ni I	282	5.51	0.032	-6.169	124	110	-0.60	-0.50
1731	7522.770	Ni I	126	3.66	0.525	-4.980	332	245	-0.42	-0.39
1732	7525.113	Ni I	139	3.63	0.507	-5.005	316	237	-0.54	-0.50
1733	7531.148	Fe I	1137	4.37	0.562	-4.898	360	247	-0.61	-0.61
1734	7540.434	Fe I	266	2.73	0.098	-5.851	183	174	-3.85	-3.87
1735	7541.531	Fe I	957	3.94	0.027	-6.386	151	143	-3.29	-3.29
1736	7547.895	Fe I	1306	5.10	0.159	-5.531	154	135	-1.31	-1.25
1737	7551.098	Fe I	1303	5.08	0.081	-5.855	140	127	-1.69	-1.65
1738	7552.484	Ni I	286	5.61	0.071	-5.905	130	110	-0.13	-0.14
1739	7555.602	Ni I	187	3.85	0.585	-4.881	396	265	0.14	0.10
1740	7563.016	Fe I	1251	4.83	0.127	-5.697	152	137	-1.69	-1.70
1741	7564.961	Co I		4.91	0.007	-6.904	131	123	-0.37	-0.31
1742	7568.906	Fe I	1077	4.28	0.518	-4.962	320	233	-0.93	-0.89
1743	7574.043	Ni I	156	3.83	0.472	-5.055	289	221	-0.47	-0.47
1744	7582.113	Fe I	1274	4.95	0.084	-5.812	142	130	-1.79	-1.72
1745	7583.793	Fe I	402	3.02	0.574	-4.940	392	288	-1.93	-1.93
1746	7586.023	Fe I	1137	4.31	0.620	-4.743	445	266	-0.18	-0.15
1747	7588.301	Fe I	1306	5.03	0.202	-5.444	164	142	-1.23	-1.20
1748	7617.988	Fe I	1001	4.19	0.095	-5.803	157	146	-2.46	-2.42
1749	7657.602	Mg I	22	5.11	0.496	-4.827	269	191	-1.25	-1.12
1750	7680.262	Si I	36	5.86	0.453	-4.894	225	159	-0.62	-0.56

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1751	7688.418	Si I		6.19	0.067	-5.785	115	98	-1.71	-1.63
1752	7710.371	Fe I	1077	4.22	0.475	-5.063	293	222	-1.16	-1.22
1753	7711.723	Fe II	73	3.90	0.347	-5.190	203	160	-2.78	-2.72
1754	7715.582	Ni I	109	3.70	0.361	-5.171	232	192	-0.95	-0.87
1755	7719.055	Fe I	1304	5.03	0.217	-5.397	169	145	-1.18	-1.12
1756	7723.207	Fe I	108	2.28	0.336	-5.271	248	217	-3.54	-3.53
1757	7727.613	Ni I	156	3.68	0.570	-4.897	390	268	-0.09	-0.08
1758	7737.668	Fe I	1137	4.41	0.023	-6.381	143	135	-2.92	-2.84
1759	7745.516	Fe I	1305	5.08	0.165	-5.541	156	137	-1.31	-1.28
1760	7746.594	Fe I	1309	5.06	0.142	-5.638	152	135	-1.41	-1.42
1761	7748.277	Fe I	402	2.95	0.606	-4.853	449	313	-1.70	-1.63
1762	7748.895	Ni I	156	3.70	0.564	-4.929	384	266	-0.11	-0.17
1763	7751.109	Fe I	1304	4.99	0.336	-5.197	208	167	-0.87	-0.82
1764	7771.961	O I	1	9.14	0.337	-4.988	135	93	0.28	0.29
1765	7774.168	O I	1	9.14	0.300	-5.053	118	83	0.09	0.14
1766	7775.391	O I	1	9.14	0.249	-5.170	97	71	-0.16	-0.14
1767	7780.562	Fe I	1154	4.47	0.608	-4.715	439	259	-0.04	0.06
1768	7797.582	Ni I	201	3.90	0.520	-4.962	337	243	-0.14	-0.10
1769	7799.992	Si I	81	6.18	0.291	-5.111	164	124	-0.84	-0.76
1770	7800.281	Rb I	1	0.00	0.039	-6.168	157	149	0.02	0.06
1771	7802.469	Fe I	1303	5.08	0.124	-5.716	149	133	-1.47	-1.49
1772	7807.914	Fe I	1303	4.99	0.411	-5.078	245	185	-0.62	-0.56
1773	7813.641	Fe I	1305	5.10	0.019	-6.422	131	122	-2.34	-2.24
1774	7820.789	Fe I	1118	4.29	0.046	-6.124	148	139	-2.71	-2.69
1775	7821.750	Si I		6.08	0.021	-6.376	109	98	-2.36	-2.34
1776	7826.754	Ni I	109	3.70	0.088	-5.810	160	149	-1.87	-1.80
1777	7832.207	Fe I	1154	4.43	0.622	-4.690	469	260	0.09	0.10
1778	7835.301	Al I	10	4.02	0.222	-5.208	155	125	-0.79	-0.64
1779	7836.129	Al I	10	4.02	0.287	-5.055	172	133	-0.59	-0.40
1780	7841.375	Fe II	72	3.90	0.024	-6.389	101	95	-4.40	-4.35
1781	7844.547	Fe I	1250	4.83	0.097	-5.786	148	135	-1.84	-1.80
1782	7849.969	Si I	81	6.19	0.280	-5.106	162	123	-0.86	-0.77
1783	7855.141	Ni I	267	4.54	0.054	-5.990	140	130	-1.31	-1.21
1784	7855.398	Fe I	1305	5.06	0.202	-5.446	166	143	-1.20	-1.16
1785	7863.781	Ni I	268	4.54	0.106	-5.711	149	136	-0.97	-0.89

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1786	7869.609	Fe I	1137	4.37	0.198	-5.457	175	156	-1.88	-1.82
1787	7877.055	Mg II	8	10.00	0.093	-5.666	44	32	0.34	0.40
1788	7879.766	Fe I	1306	5.03	0.088	-5.845	143	131	-1.69	-1.68
1789	7896.375	Mg II	8	10.00	0.131	-5.466	56	40	0.61	0.74
1790	7912.379	Si I	68	6.10	0.075	-5.778	117	101	-1.76	-1.70
1791	7912.871	Fe I	12	0.86	0.384	-5.226	293	257	-4.84	-4.85
1792	7917.437	Ni I	109	3.74	0.196	-5.462	181	162	-1.39	-1.32
1793	7918.387	Si I	57	5.95	0.423	-4.941	225	158	-0.62	-0.58
1794	7925.840	Si I		6.22	0.103	-5.614	122	102	-1.47	-1.40
1795	7932.352	Si I	57	5.96	0.454	-4.909	246	166	-0.47	-0.50
1796	7937.148	Fe I	1136	4.31	0.639	-4.628	514	263	0.22	0.19
1797	7941.090	Fe I	623	3.27	0.345	-5.262	239	203	-2.52	-2.56
1798	7945.852	Fe I	1154	4.39	0.632	-4.683	499	261	0.22	0.10
1799	7949.152	Ti I	125	1.50	0.086	-5.862	189	181	-1.42	-1.40
1800	7954.937	Fe I	402	2.99	0.057	-6.042	174	166	-3.85	-3.83
1801	7955.699	Fe I	1305	5.03	0.180	-5.504	162	141	-1.30	-1.27
1802	7959.152	Fe I	1304	5.03	0.166	-5.552	159	139	-1.35	-1.34
1803	7970.305	Si I	57	5.96	0.163	-5.438	135	114	-1.48	-1.41
1804	7975.578	Si I	68	6.08	0.035	-6.131	111	99	-2.14	-2.09
1805	7996.441	Ti I	308	3.34	0.056	-6.013	152	143	0.15	0.20
1806	7996.812	Co I	79	2.14	0.021	-6.412	185	180	-2.54	-2.45
1807	8002.578	Fe I	1217	4.58	0.068	-5.941	148	137	-2.25	-2.21
1808	8009.352	Si I	74	6.12	0.020	-6.347	109	98	-2.36	-2.27
1809	8024.840	Ti I	151	1.88	0.083	-5.854	182	173	-1.07	-1.05
1810	8027.949	Fe I	623	3.25	0.173	-5.554	190	174	-3.04	-3.01
1811	8035.621	Si I	57	5.98	0.158	-5.461	134	113	-1.48	-1.42
1812	8046.789	Si I	73	6.12	0.046	-5.992	113	99	-1.98	-1.91
1813	8046.797	Si I	73	6.12	0.045	-6.093	113	100	-2.02	-1.98
1814	8047.625	Fe I	12	0.86	0.455	-5.143	335	282	-4.63	-4.65
1815	8056.016	Co I	193	4.15	0.039	-6.180	150	141	-0.31	-0.29
1816	8065.871	Al I	16	4.09	0.030	-6.074	121	106	-1.76	-1.60
1817	8068.242	Ti I	151	1.87	0.061	-6.027	179	172	-1.23	-1.22
1818	8075.152	Fe I	12	0.91	0.281	-5.395	259	236	-5.04	-5.08
1819	8092.637	Cu I	6	3.82	0.267	-5.288	201	173	0.00	-0.15
1820	8093.934	Co I	189	4.02	0.152	-5.568	173	157		0.30

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1821	8096.879	Fe I	999	4.07	0.257	-5.382	198	172	-1.98	-1.99
1822	8112.168	Fe I	265	2.69	0.121	-5.772	190	179	-3.78	-3.82
1823	8129.320	Fe I	265	2.76	0.032	-6.347	175	169	-4.35	-4.38
1824	8207.754	Fe I	1136	4.44	0.439	-5.055	277	211	-1.04	-0.98
1825	8209.848	Mg I		5.75	0.048	-5.975	121	105	-2.33	-2.30
1826	8216.305	N I	2	10.33	0.038	-6.007	22	16	0.03	0.11
1827	8230.633	Si I	19	5.62	0.100	-5.709	126	112	-2.09	-2.06
1828	8232.320	Fe I	1136	4.41	0.464	-5.042	296	221	-0.97	-0.97
1829	8239.137	Fe I	108	2.42	0.357	-5.289	260	223	-3.34	-3.43
1830	8242.516	N I	2	10.33	0.070	-5.867	34	24	0.41	0.29
1831	8248.133	Fe I	1136	4.37	0.421	-5.073	268	207	-1.18	-1.09
1832	8248.812	Ca II	13	7.51	0.306	-5.099	148	100	0.50	0.56
1833	8254.715	Ca II	13	7.51	0.095	-5.670	69	55	-0.54	-0.42
1834	8264.281	Fe I	1332	5.10	0.134	-5.607	151	134	-1.41	-1.35
1835	8269.652	Fe I	1218	4.59	0.111	-5.766	155	141	-2.00	-2.01
1836	8275.895	Fe I	1270	4.95	0.220	-5.440	174	149	-1.24	-1.26
1837	8293.516	Fe I	623	3.30	0.413	-5.175	277	224	-2.28	-2.35
1838	8299.988	Fe I	1331	5.07	0.067	-5.952	139	128	-1.80	-1.77
1839	8305.617	Mg I		5.93	0.145	-5.328	131	107	-1.67	-1.41
1840	8310.254	Mg I		5.93	0.198	-5.133	144	113	-1.32	-1.14
1841	8317.387	Si I	19	5.61	0.028	-6.196	114	106	-2.72	-2.60
1842	8327.055	Fe I	60	2.20	0.676	-4.661	641	357	-1.53	-1.59
1843	8335.156	C I	10	7.68	0.355	-4.860	159	111	-0.67	-0.48
1844	8338.340	Si I	33	5.86	0.091	-5.691	120	106	-1.91	-1.82
1845	8339.406	Fe I	1153	4.43	0.517	-4.932	349	243	-0.65	-0.61
1846	8340.500	Ni I	139	3.80	0.056	-6.080	153	145	-2.00	-2.01
1847	8353.148	Ti I	33	0.81	0.030	-6.378	195	189	-2.59	-2.63
1848	8358.520	Fe I	401	2.99	0.137	-5.669	188	175	-3.43	-3.41
1849	8364.238	Ti I	33	0.84	0.155	-5.630	214	201	-1.77	-1.78
1850	8365.641	Fe I	623	3.25	0.470	-5.070	320	249	-2.10	-2.11
1851	8377.863	Ti I	33	0.83	0.206	-5.499	224	208	-1.62	-1.63
1852	8382.539	Ti I	33	0.82	0.204	-5.519	224	208	-1.64	-1.66
1853	8382.777	Ti I	33	0.81	0.168	-5.599	217	204	-1.76	-1.77
1854	8387.777	Fe I	60	2.18	0.687	-4.622	673	351	-1.37	-1.49
1855	8396.898	Ti I	33	0.81	0.166	-5.596	216	203	-1.77	-1.77

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1856	8401.406	Fe I	108	2.48	0.225	-5.522	217	197	-3.63	-3.72
1857	8412.355	Ti I	33	0.82	0.272	-5.365	241	218	-1.45	-1.44
1858	8422.914	Fe I	999	4.14	0.174	-5.568	176	158	-2.18	-2.19
1859	8424.141	Fe I	1272	4.95	0.238	-5.362	180	153	-1.19	-1.14
1860	8425.879	Fe I	12	1.01	0.046	-6.146	211	205	-5.91	-5.88
1861	8426.512	Ti I	33	0.83	0.364	-5.248	272	237	-1.20	-1.24
1862	8434.492	Fe I	1270	5.01	0.103	-5.787	147	133	-1.64	-1.64
1863	8434.969	Ti I	33	0.85	0.472	-5.118	334	273	-0.84	-0.93
1864	8435.660	Ti I	33	0.84	0.429	-5.152	305	256	-1.00	-1.03
1865	8439.578	Fe I	1172	4.55	0.464	-5.002	301	220	-0.80	-0.72
1866	8443.977	Si I	46	5.87	0.196	-5.371	144	121	-1.45	-1.40
1867	8444.387	Si I	46	5.87	0.024	-6.353	111	101	-2.53	-2.52
1868	8450.879	Ti I	224	2.25	0.058	-6.058	172	164	-0.89	-0.90
1869	8467.141	Ti I	182	2.12	0.029	-6.283	170	164	-1.34	-1.26
1870	8471.746	Fe I	1270	4.95	0.249	-5.371	184	155	-1.15	-1.15
1871	8473.680	Mg I		5.93	0.054	-5.875	123	104	-2.07	-2.02
1872	8480.645	Fe I	1272	4.99	0.109	-5.749	149	134	-1.62	-1.62
1873	8481.988	Fe I	999	4.19	0.169	-5.572	174	157	-2.15	-2.15
1874	8492.082	Si I		5.86	0.047	-6.071	115	104	-2.24	-2.24
1875	8510.258	Si I		6.18	0.045	-6.004	111	97	-1.94	-1.88
1876	8514.082	Fe I	60	2.20	0.613	-4.835	523	356	-2.19	-2.15
1877	8515.117	Fe I	401	3.02	0.521	-5.004	375	281	-2.07	-2.10
1878	8525.020	Zr II		2.41	0.082	-5.914	154	143	-0.12	-0.10
1879	8527.855	Fe I	1270	5.02	0.095	-5.737	146	132	-1.67	-1.57
1880	8556.793	Si I	45	5.87	0.487	-4.780	292	186	-0.21	-0.21
1881	8567.777	Fe I	1269	4.91	0.047	-6.084	139	129	-2.12	-2.06
1882	8571.805	Fe I	1272	5.01	0.210	-5.436	172	148	-1.22	-1.19
1883	8579.102	Si I	56	5.98	0.029	-6.195	110	100	-2.34	-2.26
1884	8582.270	Fe I	401	2.99	0.496	-5.034	352	270	-2.23	-2.23
1885	8583.332	Ca I		4.44	0.057	-5.865	133	110	-0.76	-0.69
1886	8584.785	Fe I	1270	5.01	0.041	-6.207	136	126	-2.10	-2.11
1887	8592.125	Fe I	1269	5.01	0.033	-6.230	135	125	-2.20	-2.14
1888	8595.969	Si I	80	6.19	0.226	-5.223	150	119	-1.03	-0.91
1889	8597.062	Si I	80	6.19	0.162	-5.435	134	110	-1.25	-1.21
1890	8598.832	Fe I	1153	4.39	0.358	-5.206	237	191	-1.36	-1.37

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1891	8606.004	Si I	55	5.95	0.042	-6.084	112	102	-2.19	-2.18
1892	8606.375	Ni I	275	5.28	0.048	-6.043	129	117	-0.66	-0.58
1893	8607.082	Fe I	1272	5.01	0.131	-5.637	153	136	-1.51	-1.47
1894	8610.609	Fe I	1153	4.43	0.179	-5.511	173	154	-1.88	-1.84
1895	8611.809	Fe I	339	2.84	0.577	-4.893	460	321	-1.81	-1.82
1896	8613.937	Fe I	1272	4.99	0.214	-5.444	174	149	-1.22	-1.22
1897	8616.289	Fe I	1266	4.91	0.304	-5.282	206	168	-1.01	-1.04
1898	8621.613	Fe I	401	2.95	0.480	-5.068	339	264	-2.34	-2.37
1899	8629.160	N I	8	10.69	0.023	-6.323	18	12	0.05	0.03
1900	8632.418	Fe I	1050	4.10	0.093	-5.815	161	150	-2.56	-2.53
1901	8633.949	Ca I		4.45	0.088	-5.763	138	112	-0.54	-0.58
1902	8636.996	Ni I	186	3.85	0.085	-5.838	158	147	-1.75	-1.69
1903	8654.434	Fe I	623	3.30	0.061	-6.105	170	161	-3.54	-3.62
1904	8675.379	Ti I	68	1.07	0.146	-5.682	209	197	-1.58	-1.62
1905	8682.984	Ti I	68	1.05	0.092	-5.870	200	191	-1.84	-1.88
1906	8683.391	N I	1	10.33	0.041	-5.978	25	17	0.09	0.15
1907	8688.637	Fe I	60	2.18	0.697	-4.493	726	328	-1.09	-1.18
1908	8692.336	Ti I	68	1.05	0.041	-6.231	193	186	-2.22	-2.25
1909	8698.711	Fe I	400	2.99	0.134	-5.686	188	176	-3.44	-3.44
1910	8699.465	Fe I	1267	4.95	0.422	-5.087	271	200	-0.55	-0.59
1911	8700.328	Fe I	1266	4.95	0.030	-6.267	136	126	-2.30	-2.22
1912	8702.496	Ni I	83	2.74	0.054	-5.995	174	166	-3.04	-2.91
1913	8711.645	N I	1	10.33	0.023	-6.192	17	12	-0.23	-0.14
1914	8712.695	Mg I		5.93	0.245	-5.169	159	122	-1.23	-1.18
1915	8717.828	Mg I		5.93	0.323	-4.988	189	135	-0.97	-0.88
1916	8718.758	N I	1	10.34	0.021	-6.250	19	13	-0.19	-0.17
1917	8742.461	Si I	44	5.87	0.448	-4.923	263	177	-0.50	-0.56
1918	8752.023	Si I	43	5.87	0.476	-4.846	288	185	-0.34	-0.37
1919	8757.195	Fe I	339	2.84	0.547	-4.980	421	306	-2.03	-2.15
1920	8763.977	Fe I	1172	4.65	0.526	-4.852	375	245	-0.27	-0.17
1921	8766.418	Si I	54	5.96	0.083	-5.739	120	106	-1.86	-1.79
1922	8770.684	Ni I	82	2.74	0.094	-5.763	180	170	-2.77	-2.67
1923	8772.875	Al I	9	4.02	0.344	-5.057	201	149	-0.39	-0.36
1924	8773.906	Al I	9	4.02	0.400	-4.910	230	162	-0.19	-0.06
1925	8804.621	Fe I	106	2.28	0.421	-5.181	306	252	-3.26	-3.33

N	λ [Å]	El.	M.	EPL [eV]	D	log W/λ	h_D [km]	h_W [km]	log gf_D	log gf_W
1926	8828.910	Al I	15	4.09	0.016	-6.441	118	106	-2.06	-1.97
1927	8841.262	Al I	15	4.09	0.032	-6.140	120	106	-1.75	-1.69
1928	8878.250	Fe I	401	2.99	0.086	-5.895	180	171	-3.67	-3.68
1929	8883.836	Si I	54	5.95	0.077	-5.773	119	105	-1.91	-1.84
1930	8892.969	Si I	54	5.98	0.332	-5.063	184	140	-0.86	-0.79
1931	8912.066	Ca II		7.05	0.448	-4.882	267	150	0.90	0.72
1932	8913.000	Al I	14	4.09	0.014	-6.588	117	106	-2.12	-2.12
1933	8916.230	Cr I		3.89	0.010	-6.774	138	130	-1.52	-1.49
1934	8923.547	Mg I		5.94	0.280	-5.218	174	129	-1.10	-1.23
1935	8925.551	Si I	54	5.95	0.164	-5.445	134	114	-1.49	-1.43
1936	8931.766	Fe I	507	3.05	0.093	-5.840	180	170	-3.57	-3.56
1937	8947.187	Cr I	142	3.09	0.208	-5.508	190	169	-0.80	-0.86
1938	8949.324	Si I	54	5.96	0.240	-5.271	154	125	-1.21	-1.17
1939	8968.187	Ni I	284	5.32	0.142	-5.544	149	127	-0.06	0.03
1940	8978.199	Fe I	713	3.41	0.054	-6.090	167	159	-3.49	-3.49
1941	9013.977	Fe I	106	2.28	0.180	-5.557	212	197	-3.97	-3.97
1942	9035.855	Cr I	142	3.07	0.104	-5.703	168	156	-1.22	-1.12
1943	9099.102	Ca I		3.91	0.040	-6.167	130	117	-1.52	-1.53
1944	9140.117	Fe I	622	3.25	0.071	-5.940	173	164	-3.52	-3.48
1945	9265.898	O I	8	10.74	0.116	-5.476	50	35	0.57	0.65
1946	9290.480	Cr I	29	2.53	0.352	-5.256	254	211	-0.91	-0.99
1947	9362.355	Fe I	106	2.28	0.375	-5.272	286	241	-3.39	-3.52
1948	9392.801	N I	7	10.69	0.050	-6.097	27	19	0.51	0.29
1949	9571.809	Cr I	29	2.53	0.102	-5.847	177	166	-1.76	-1.81
1950	9603.031	C I	2	7.48	0.280	-5.005	136	100	-1.16	-0.99
1951	9689.410	Si I	65	6.10	0.217	-5.296	148	120	-1.15	-1.09
1952	9839.578	Si I	65	6.08	0.088	-5.763	121	105	-1.74	-1.72
1953	9854.699	Ca II		7.50	0.114	-5.517	80	62	-0.42	-0.21
1954	9890.699	Ca II		8.44	0.232	-5.150	120	78	1.09	1.26
1955	9891.898	Si I	71	6.13	0.128	-5.564	126	108	-1.48	-1.44
1956	9924.387	Fe I	737	3.55	0.077	-6.024	169	159	-3.20	-3.31
1957	9931.500	Ca II		7.51	0.168	-5.344	100	74	-0.11	0.09
1958	9961.277	Na I	23	3.62	0.036	-5.715	118	101	-1.00	-0.73

Ернест Андрійович Гуртовенко
Роман Іванович Костик
Система сонячних сил осциляторів
Затверджено до друку редакційною радою ГАО НАН України

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