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# Prominence atlas in the SUMER range 800–1250 Å

## II. Line profile properties and ions identifications*

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**ABSTRACT**

We present a SOHO/SUMER spectral atlas in the 800–1250 Å range of a prominence and a Quiet Sun (QS) region observed in 1999. The atlas is produced for two separate areas of the prominence. The QS spectrum is used as a reference. This is the first prominence atlas obtained with high spectral resolution (≈0.044 Å). It provides information concerning more than 550 line profiles, in terms of position, total radiance, and *FWHM*, along with the ion identification. Forty new lines have been identified with respect to previously published spectra.

**Key words.** Sun: prominences – Sun: UV radiation – atlases

## 1. Introduction

The latest generation of high resolution and wide spectral range spectrographs, such as SUMER on board SOHO, has contributed to improving the knowledge of the UV and EUV emission of the solar atmosphere. Their data have also contributed to improving the quality of atomic physics calculations, and extending atomic databases (e.g. CHIANTI Young et al. 2003). This also includes the identification of a large number of lines previously unknown (e.g. Landi et al. 2004; Bhatia & Landi 2003; Kink et al. 1997, 1999).

One of the important achievements of SUMER is the publication of spectral atlases for different solar features, with significant improvements over previous ones (e.g. Curdt et al. 1997; Feldman et al. 1997; Curdt et al. 2001, 2004; Parenti et al. 2004, and references therein). The possibility of distinguishing the spectra of different features from the flux of the whole star is the great advantage of solar spectroscopy over its stellar counterpart. The spectrum of a solar structure represents its characteristic fingerprint and is essential for full comprehension of the plasma physics involved, as well as for comparisons to disk-integrated stellar spectra.

In this paper we present the first complete spectral atlas of a solar prominence in the range 800–1250 Å observed by SUMER. We also include a quiet Sun (QS) atlas obtained in the same spectral range. A few other atlases of prominences can be found in the literature, mainly obtained with Skylab (Noyes et al. 1972; Mariska et al. 1979; Moe et al. 1979). The important improvement of the present work is the high spectral resolution which conveys information on the full line profile.

A previous paper (Parenti et al. 2004, hereafter Paper I) provided an introduction to this atlas. It gives details of the observations and describes preliminary analysis of the data. Parenti et al. (2005a) introduce the preliminary results of diagnostics based on these data. Here we present the full spectral atlas.

## 2. Observations

The prominence and the QS spectra we present here were obtained in October 1999 with the SOHO/SUMER instrument. SUMER is a high resolution spectrometer: 1″ spatial resolution and 44 mÅ spectral resolution at 1100 Å. Two detectors covering slightly offset, but largely overlapping spectral ranges are available. In our case we used detector "A", which includes the range 780–1600 Å in the first order of grating diffraction, and 390–850 Å in the second order. The detector is a 1024×360 array whose central area is coated with KBr (potassium bromide) to increase the efficiency in the range 900–1500 Å. The flanking bare portions of the detector have reduced sensitivity in that range, but offer a good response to the $\lambda < 900$ Å second order light. This property was used to isolate the second order lines from the first. Additional details concerning the instrument and its capabilities can be found in Wilhelm et al. (1995, 1997) and Lemaire et al. (1997).

For the observations, we used the REFSPEC program with a $0.3 \times 120$ arcsec$^2$ slit crossing the limb for the prominence, and $1 \times 120$ arcsec$^2$ in a separate series of intergrations near the disk center for the QS. Each exposure captured a spectral window of 40 Å with the central 20 Å recorded on the KBr portion of the detector. The full spectral range was covered by a series of windows overlapping by about 33 Å. Further details concerning the observations can be found in Table 1 of Paper I.

* Figures 5 to 12 and Tables 1 and 2 are only available in electronic form at http://www.edpsciences.org

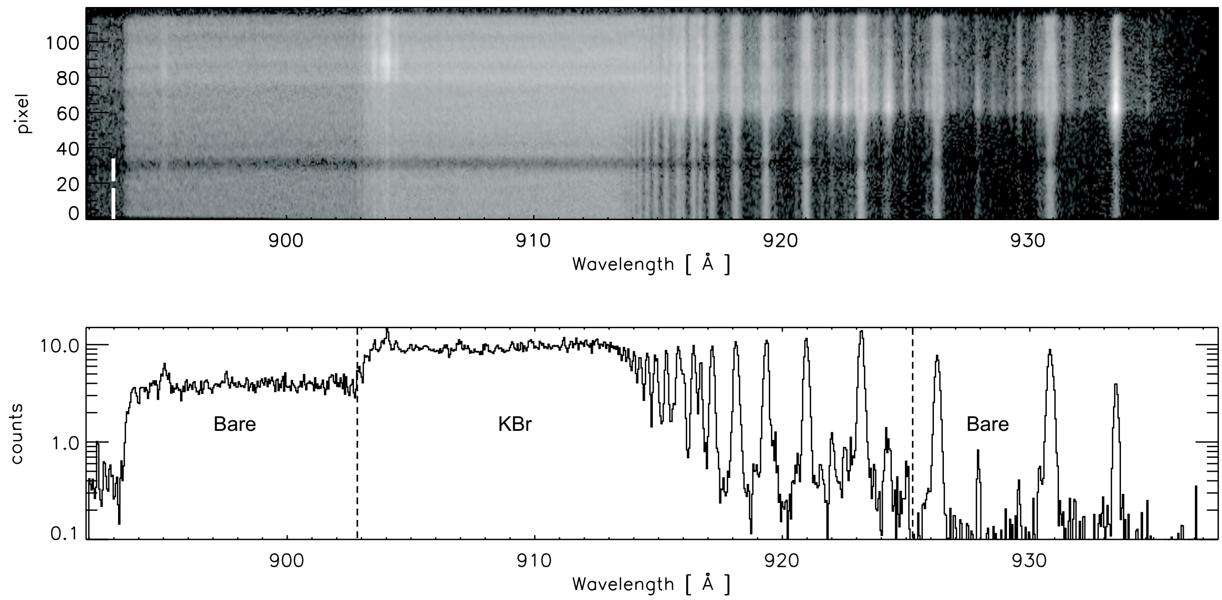


**Fig. 1.** Image of the detector (*top*) when looking at the prominence in the spectral range of the H-Ly continuum head. North is at the top of the image. The white vertical segments at the left bottom corner of the image mark the sections of the pixels selected along the slit for the prominence datasets A_1 (*top*) and A_2 (*bottom*). The spectrum obtained after averaging over the pixels of A_1 is plotted at the bottom of the figure. The vertical dashed lines delimit the bare and KBr parts of the detector.

To analyze the prominence, we selected two separate areas of the slit, identified as A_1 and A_2 in Paper I. This choice was guided by the presence of spatial intensity variations along the off-limb part of the slit, which could be due to different conditions of the local plasma. We return to this point later. The location of A_1 and A_2 are marked in Fig. 1 (also, Fig. 1 of Paper I). For the QS, we averaged the spectra over the full slit.

Figure 1 (top) gives an example of the image of the detector when looking at the prominence. We show here the H-Ly continuum head and part of the converging Lyman series. The solar disk is at the top of the image. The solar limb is situated at about pixel 60. The bright central part of the detector is the KBr section. The presence of the prominence on the off-limb portion of the image is marked by the emission in the H-Ly series. The non-uniform intensity decrease along the slit shows that the structure is filamented. In particular we draw attention to the dark section at about pixel 30, which is the location of the dataset A_1, as marked by the top white segment at the left corner of the image; the bottom segment marks the location of A_2. The nonuniformity of the prominence intensity is not present along all of the wavelength range, as we will discuss later. The spectra for this faint part of the image is plotted at the bottom of Fig. 1. The parts of the detector having different sensitivities, can be recognized by the step in intensity in the H-Ly continuum.

## 3. Data processing

In Paper I we described the preliminary data analysis necessary to build the atlas. To summarize, we made a study to identify the level of stray light in the instrument and concluded that it was not an important effect. We performed the wavelength calibration independently for the QS and the prominence. This was accomplished by carefully selecting reference lines in each spectral window. Finally, we presented a sample of the atlas in the range 1005 Å–1050 Å, obtained by a multi-Gaussian line-fitting analysis. To build the full atlas presented here, we followed the methods of analysis described in Paper I.

## 4. The full atlas

Figures 4–12 show the calibrated SUMER spectra for the QS and prominence. Most of them have been obtained from the KBr portion of the detector. Small sections of the full spectral range covered by the instrument fall in the "bare part" only, where we extracted a few other lines, such as O II 796.66 Å, the first line of our atlas. For this reason the left section of the bare detector has been included in Fig. 4 (top). Because of its high intensity, the H-Ly$\alpha$ line can only be measured through an attenuator which strongly affects the instrumental profile. For this reason, it is not included in the atlas. The bright outer wings fall on the bare section, where their intensity is reduced enough to be safely recorded. These are shown in the last two frames of Fig. 11. Here, we were able to extract few other lines. In Figs. 4–12 the QS spectrum is marked in black, the prominence A_1 in green and A_2 in purple. The radiance scale is appropriate for the first order. Lines identified and measured in these spectra are listed in Tables 1 and 2.

In some of the frames of Figs. 4–12 one can see a wavelength shift between the QS and the prominence spectra, particularly at the sides of the window, where misalignments go in opposite directions. This is due to residual geometrical distortion of the detector images even after the standard correction was applied. Because the two datasets were taken using slits covering different heights on the detector ("top" for the QS and "center" for the prominence), the distortion is different. Generally the wavelength calibration helps in compensating for the residual distortion, but this was not the case for the

**Table 3.** Errors in the quantities (line position, intensity and *FWHM*) listed in Table 1. These errors are obtained by calculating the $\sigma$ of the distributions of the errors for each Gaussian parameter resulting from the fitting procedure. The three groups of errors refer to intense lines ("i"), lines blended ("b"), and faint lines ("w"), as listed in Table 1. The last two columns give the total error for the line position and intensity.

| | $\Delta\lambda$ (Å) | $\Delta I/I$ | $\Delta FWHM/FWHM$ | $\Delta\lambda$ (Å) (Tot) | $\Delta I/I$ (Tot) |
|---|---|---|---|---|---|
| i (QS) | 0.017 | 0.13 | 0.17 | 0.025 | 0.19 |
| i (A_1) | 0.018 | 0.055 | 0.10 | 0.026 | 0.16 |
| i (A_2) | 0.012 | 0.060 | 0.15 | 0.022 | 0.16 |
| b (QS) | 0.032 | 0.25 | 0.27 | 0.037 | 0.29 |
| b (A_1) | 0.038 | 0.25 | 0.27 | 0.042 | 0.29 |
| b (A_2) | 0.042 | 0.27 | 0.28 | 0.046 | 0.31 |
| w (QS) | 0.047 | 0.25 | 0.25 | 0.051 | 0.29 |
| w (A_1) | 0.024 | 0.28 | 0.24 | 0.031 | 0.32 |
| w (A_2) | 0.035 | 0.28 | 0.27 | 0.040 | 0.32 |

windows where we had difficulty in selecting reference lines (see Paper I). However, the effect is minimized because of the averaging adjacent spectral frames. In particular, the line parameters in Table 1 result from an average obtained over a given line positioned at opposite sides of the spectral window in two successive exposures.

Table 1 is divided into four sections. The first provides the identified lines and the reference wavelength. The other three sections give the results of the profile-fitting for the QS and the two areas of the prominence, including the measured wavelength, the total radiance, and the *FWHM*. We marked adjacent lines with "$**$" when blended. If a feature is the superposition of two unresolved lines, we indicate both of them. The label "2" indicates that the line is an unresolved multiplet. In this case the reference wavelength is for the most intense line of the multiplet. The "$*$" mark new identifications. Unidentified lines have a blank space in the first column.

In Table 1 we also marked "†" next to the radiance value for those lines which have a peak at the limit of $3\sigma$ of the background noise (see Paper I for details). There are very few of these weak lines in the QS spectra, but the number increases in the prominence data, particularly in the faint A_2 part. Only with further deeper exposures will we be able to confirm the reality of these lines.

Table 2 provides additional information for the identified lines, including the transition, the maximum emission temperature, and the reference used for the identification. The temperature of maximum emission was derived from the CHIANTI v. 4.2 database. Fe III and Ni II are not included in this database, so we report the temperature of maximum ionization calculated by Mazzotta et al. (1998).

Table 3 provides errors estimated for the radiance, wavelength, and *FWHM* of the lines listed in Table 1 (see Paper I for details). The first three columns report the errors solely from the fitting procedure. The last two report the total errors for the wavelength and radiance, taking into account uncertainties in the respective calibrations of ±0.019 Å for wavelength and ±15% for radiometry (see Paper I).

The errors in Table 3 are reported for three general groups of features: "b" (blended), "i" (intense and isolated), and "w" (weak). The same nomenclature is used in Table 1. A line is marked *weak* if the total counts in the feature are less than 10 for the QS and prominence A_1, and 5 for prominence A_2.

In Paper I we presented a similar table with the errors evaluated for a much narrower wavelength range. The table here shows some differences. First there is a decrease in the errors for the QS parameters with respect to Paper I. We attribute this to the increased number of lines included in the error calculation, thereby improving the statistics. Although that consideration also applies to the prominence datasets, we find, however, an increase in the errors with respect to Paper I. The fact that the present analysis is performed over a large dataset gives more confidence in the present results. In fact, that the error distribution for the prominence data reported in Paper I had a non-Gaussian distribution, in contrast to the present case.

## 5. The spectra

As pointed out in Paper I, the wavelength calibration was ill-determined in some parts of the spectra due to the absence of suitable reference lines: neutrals or low stages of ionization, sufficiently bright and not blended. These criteria were particularly difficult to satisfy in the H-Ly continuum and H-Ly series wavelengths.

Looking at the H-Ly continuum, one notices a change in the slope between the two parts of the prominence. This is a temporal effect due to the nonsimultaneity of the observations. At the beginning of the observation, prominence A_1 is slightly more intense than A_2 (top of Fig. 4). In the following frames, the spectra of the two sections superpose, and/or alternatively one has become more intense than the other. The change in strength between the two spectra becomes more important during the exposures when the H-Lyman continuum head data were taken. This is clearly visible in the third and fourth windows of Fig. 5 and first window of Fig. 6, which show the A_2 spectra becoming more intense than A_1. The spectra of A_1 again become more intense than A_2 when the instrument was scanning around 950 Å (last window of Fig. 6). From there on, dataset A_1 remains dominant. The temporal variation of the spectra is more important for dataset A_1 than for A_2, with a maximum intensity variation at the H-Lyman continuum head of about 15% between one exposure and the next. Such a change may be caused by a variation in temperature, density, or line of sight structure at different moments of the observing sequence.

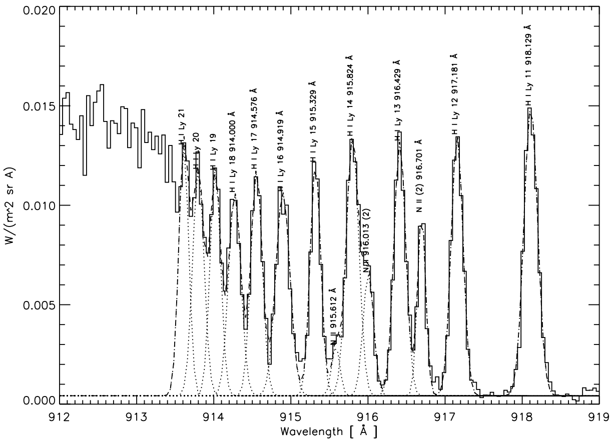


**Fig. 2.** H-Lyman series close to the continuum head for prominence A_2. The dotted lines represent the single Gaussian fitting. The dashed line results from summing the single Gaussian and the background.

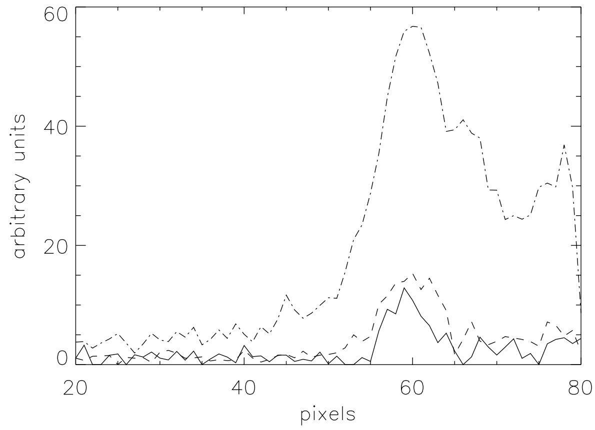


**Fig. 3.** Peak intensity as function of position along the slit, for the O I 973.234 Å (solid), Fe III 979.032 Å (dashed), and the unknown line (identified in the text as the O I 979.272 Å, thick solid).

The H-Ly series is bright in all datasets. As for the other lines in the QS spectra, the Lyman lines are wider than in the prominence. In contrast to the QS, in the prominence spectra we can recognize higher terms of the Lyman series, up to $n = 21$, much more clearly in the A_2 part, as shown in Fig. 2. We found that for $n$ greater than 4, the line can be represented well by a Gaussian profile. Because we are dealing with data accumulated over several spatial pixels on the detector, the averaging can suppress a reversal at line center otherwise present in a single pixel spectrum. We therefore examined the spectrum over single spatial pixels along the slit, and found that the faint part A_1 (see discussion above) contains a reversal of the line profile even for high $n$, such as reported in previous works (e.g. Aznar Cuadrado et al. 2003; Stellmacher et al. 2003). We leave this point for a future detailed study.

In Fig. 2 we show an example of the H-Ly series in the prominence spectra with the Gaussian fits. Because the low $n$ lines of the series have a non Gaussian profile, in Table 1 we report only their measured wavelength.

## 6. New line identifications

There are many lines in the solar spectrum which are not still identified. In the present datasets we have been able to obtain new identifications, primarily of faint lines from transitions in low stages of ionization.

A couple of Å away from the C III 977, we measure a faint line (979.163 Å in the QS) that was classed as "c" by Feldman et al. (1997), i.e., having an intensity variation with the distance in the corona that resembles that of Mg VII. This line is blended with Fe III 979.032 Å, and it is difficult to recognize it in the QS. In our attempt to identify the line, we produced a plot of the peak intensity as a function of the pixel position along the slit for the nearby Fe III 979.032 Å and O I 979.2342 Å lines (Fig. 3). The intensity profile of the unknown line is similar to those of the two ions. In particular, their maximum of intensity due to the limb brightening are close to each other. This is an indication that we are dealing with the emission of a cool line from the chromosphere or the low transition zone. It is possible that the line measured here is not the same as the one classified by Feldman et al. (1997). A possible candidate for our line is the neutral O I 979.272 Å ($2s^2\,2p^4\,{}^3P_2$–$2s^2\,2p^3\,5s\,{}^5S_2$). We also identify another weak O I line belonging to transition between the excited level $2s^2\,2p^3$ 11s and the ground level $2s^2\,2p^4$.

In the prominence A_1 spectra, the intense O III 833.742 Å appears asymmetric in one frame and wider than in the A_2 part in two successive frames. We suggest the presence of a weak blended line that we identify as the O III 833.71 Å from the transition $2s^2\,2p^2$–$2s\,2p^3$. Another possible candidate is Fe III 833.532 Å ($\log(T) = 4.4$). We excluded this possibility because of the low temperature of the prominence. In our QS datasets, there are a large number of already visible Fe III lines, e.g., in a transition from the first level $3d^5$ 4p to the ground level $3d^6$, but which disappear in the prominence. For example, nearby Fe III 813.382 is expected to be 4 times stronger than 833.532 Å (Kelly 1987), but is not visible in the prominence. For O III we also identify a line at 962.423 Å from a transition between the excited levels $2s\,2p^3$–$2s^2$ 2p 3p.

Although quite blended, three weak Fe II lines were identified in the QS. They belong to the transitions $3d^5$ 4s 4p–$3d^6$ 4s. A few N I lines also were identified. These are weak lines often visible only in the QS. They belong to transitions from the excited $2s^2\,2p^2$ 3d/4d/6s levels to the $2s^2\,2p^3$ level.

Two S I lines are seen in the QS spectra belonging to $2s^2\,3p^3$ 8s/9s–$2s^2\,3p^4$ transitions.

Two lines of S IV have been identified belonging to transitions from the excited configuration 3s $3p^2$–$3p^6$.

On the bare part of the detector and only for prominence spectra, we could identify the neutral helium 591.413 Å line in second order.

We identified a few C I lines belonging to the transitions from $2s^2$ 2p 4d/6d/10d to the ground $2s^2\,2p^2$.

We are still uncertain about some identifications, so they are labeled with a question mark.

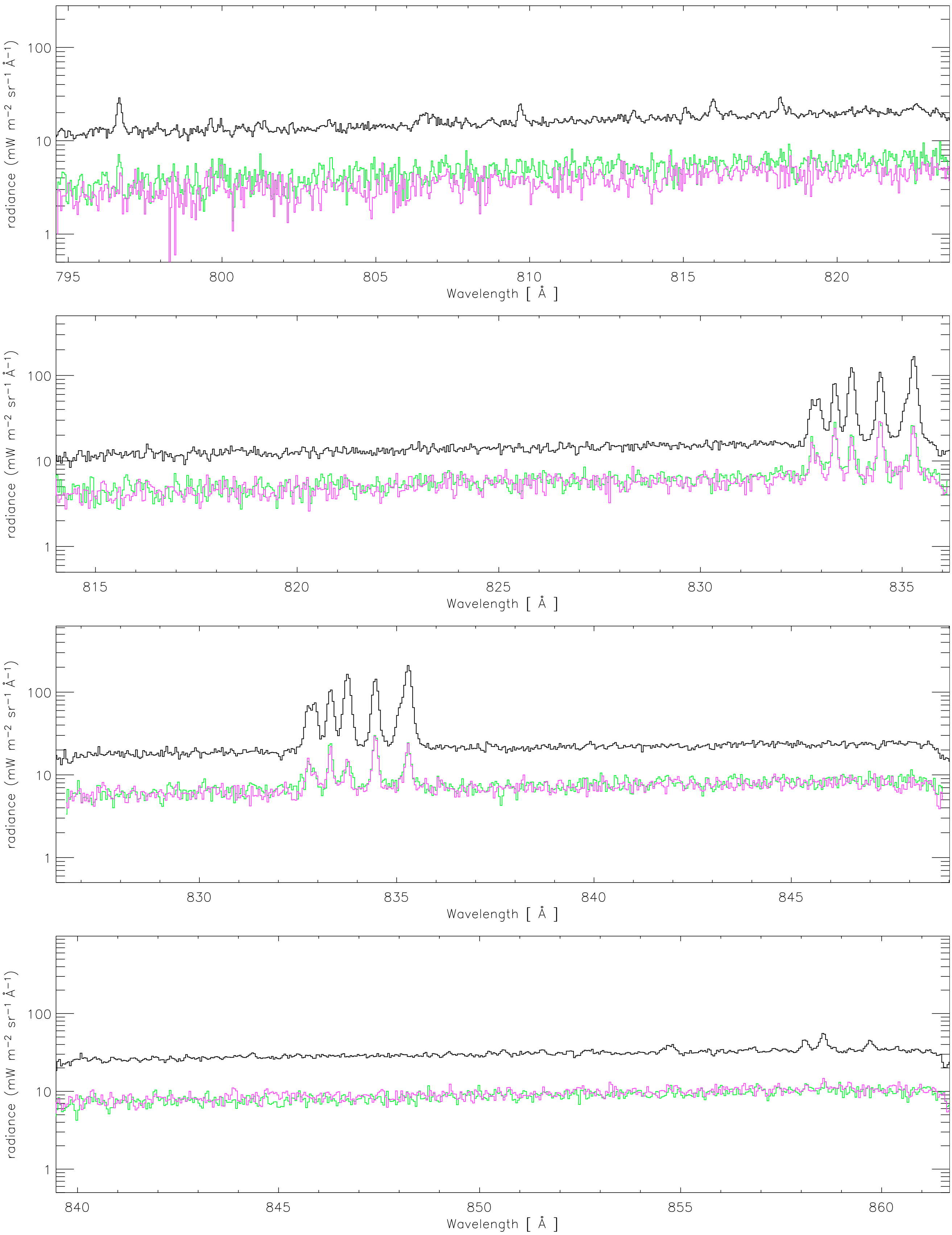


**Fig. 4.** Spectral atlas of the QS (black), A_1 (green) and A_2 (purple) parts of the prominence. The top panel shows both the left part of the bare detector (in here lies the O II 796.661 Å, the first line of the atlas) and the full KBr part. The other panels only show the KBr detector. Note that there is a wavelength overlap from one panel to the following one. Also note that the left and right parts of each panel are affected by the calibration procedure over about 0.5 Å.

## 7. Summary

We have presented here the first complete spectrum atlas of a prominence in the range 800–1250 Å. For comparison, we produced a similar atlas of the QS observed in the same epoch. We tabulate information on the profiles and total radiance for about 440 lines in the prominence and 550 lines in the QS. We also report new identifications of lines belonging to elements in low stages of ionization.

This large set of information is an important source to explore different plasma conditions, such as those in prominences and the QS. It is our intention to make further investigations using the atlas material. The H-Lyman emission and analysis of line profiles will be our primary focus (Parenti et al. 2005b). Moreover, we plan to extend the atlas to 1600 Å (the full SUMER detector A spectral range).

Such an atlas can also be an important reference for comparing high resolution solar and stellar spectra, like those provided by HST/STIS (Judge et al. 2004; Ayres 2004) and FUSE (Redfield et al. 2003).

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# Online Material

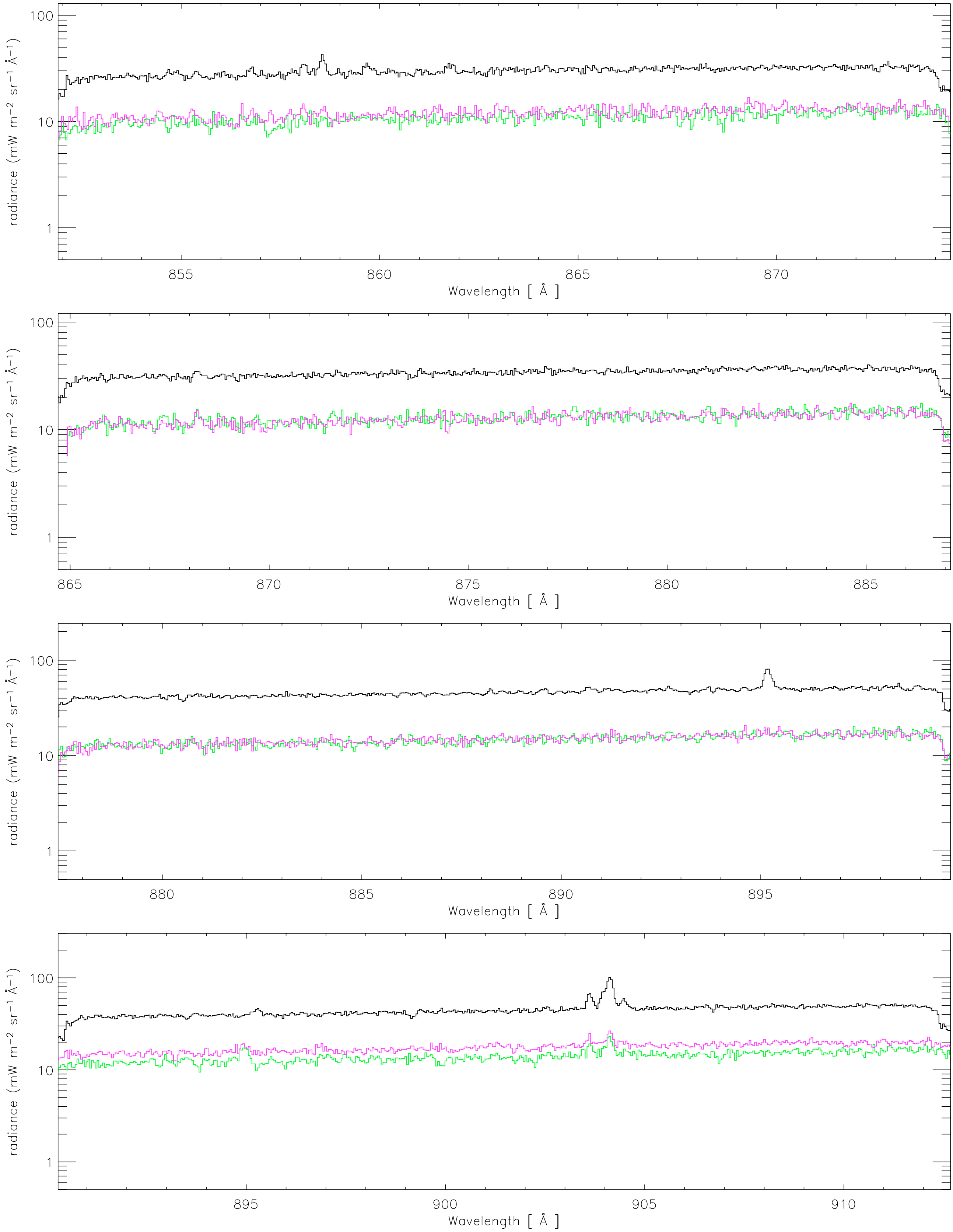


**Fig. 5.** QS and prominence spectra as they appear on the KBr section of the detector.

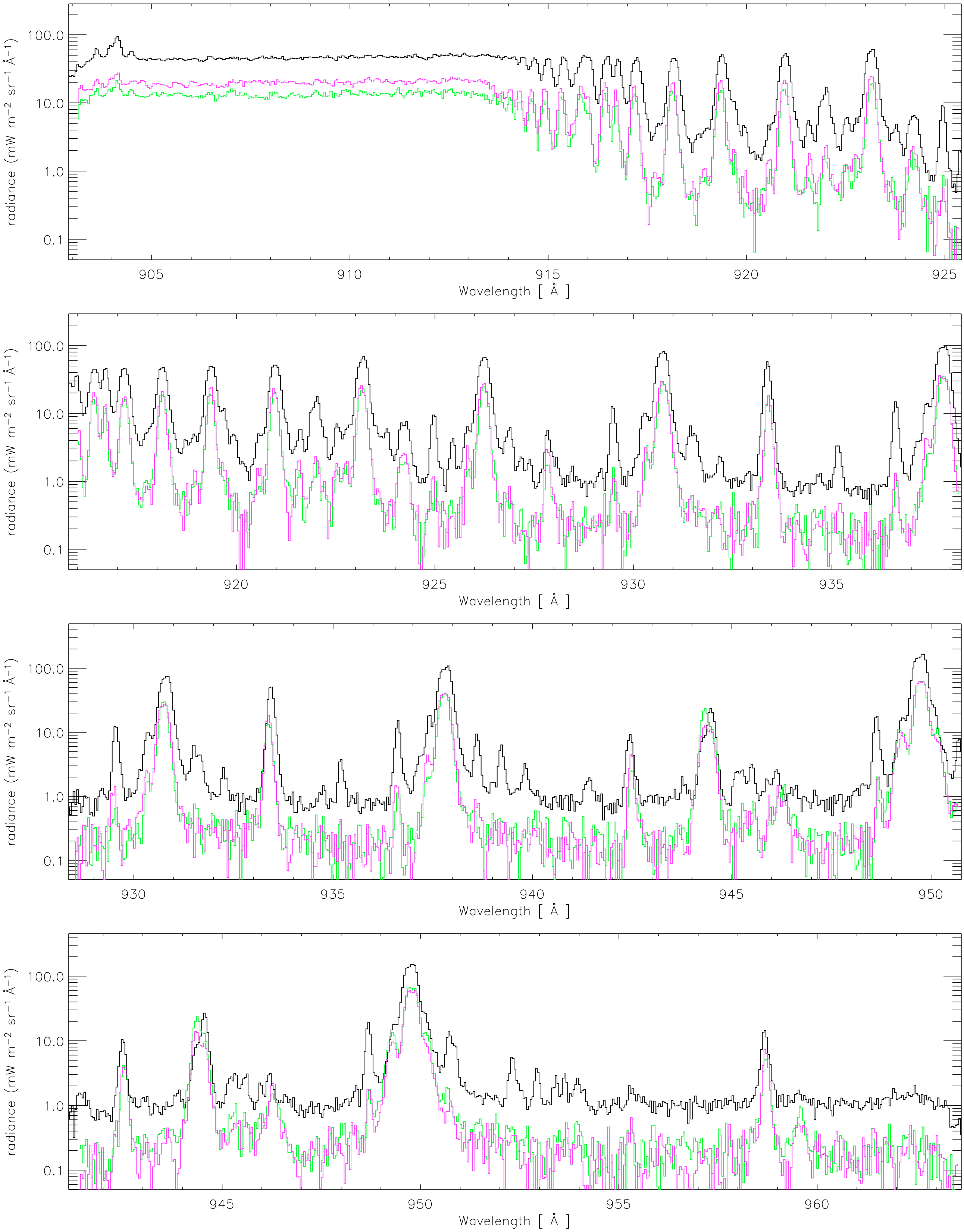


**Fig. 6.** QS and prominence spectra as they appear on the KBr section of the detector.

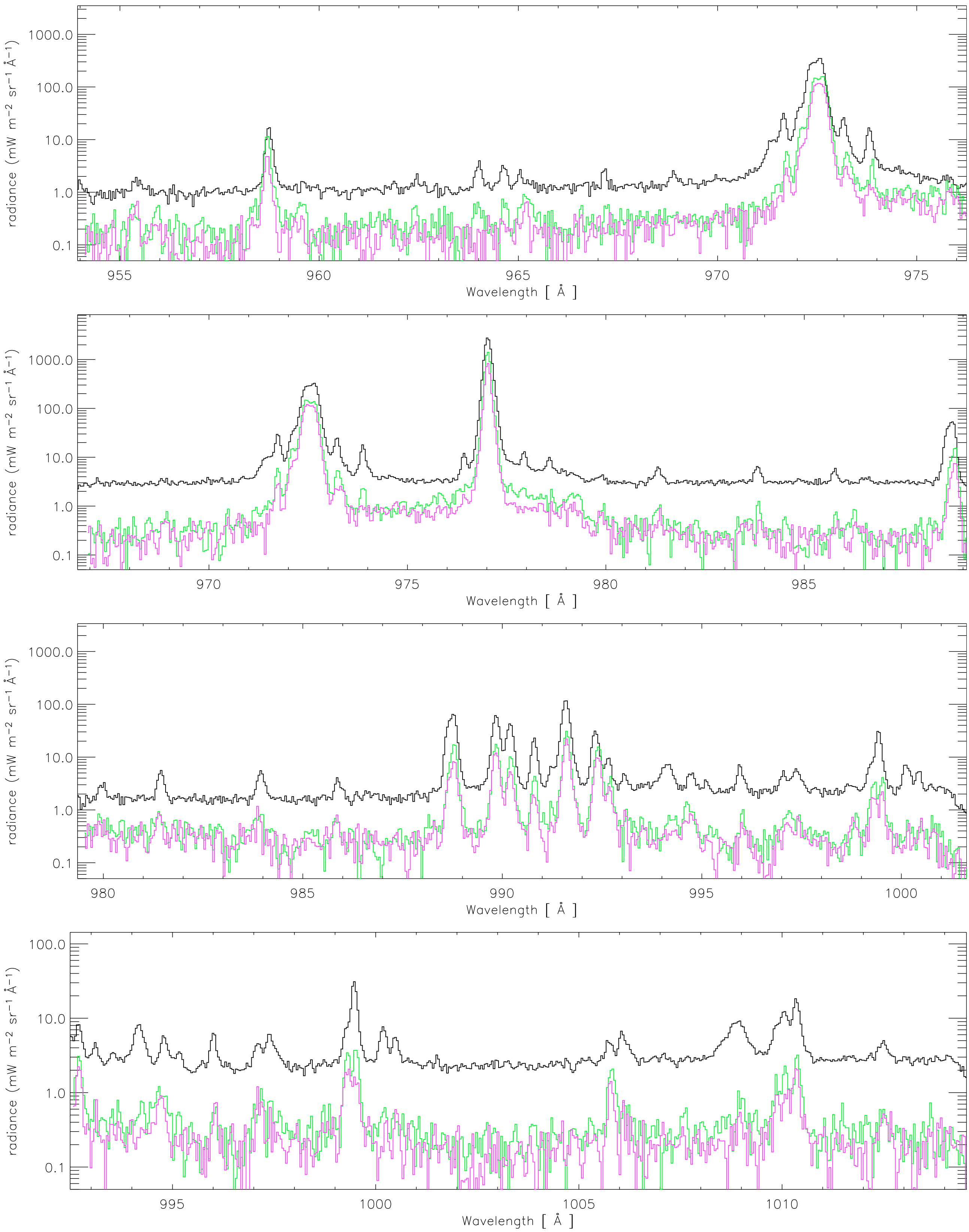


**Fig. 7.** QS and prominence spectra as they appear on the KBr section of the detector.

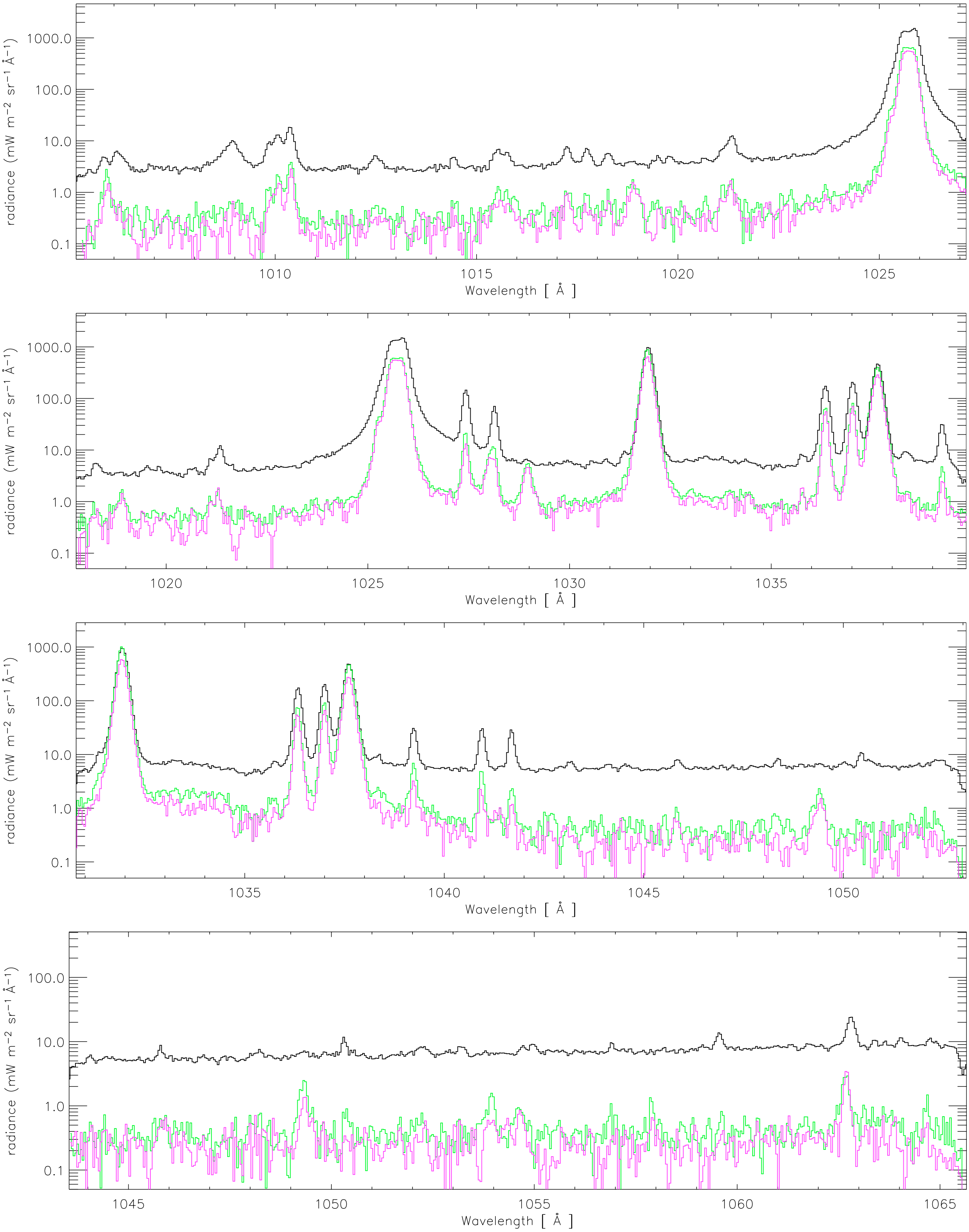


**Fig. 8.** QS and prominence spectra as they appear on the KBr section of the detector.

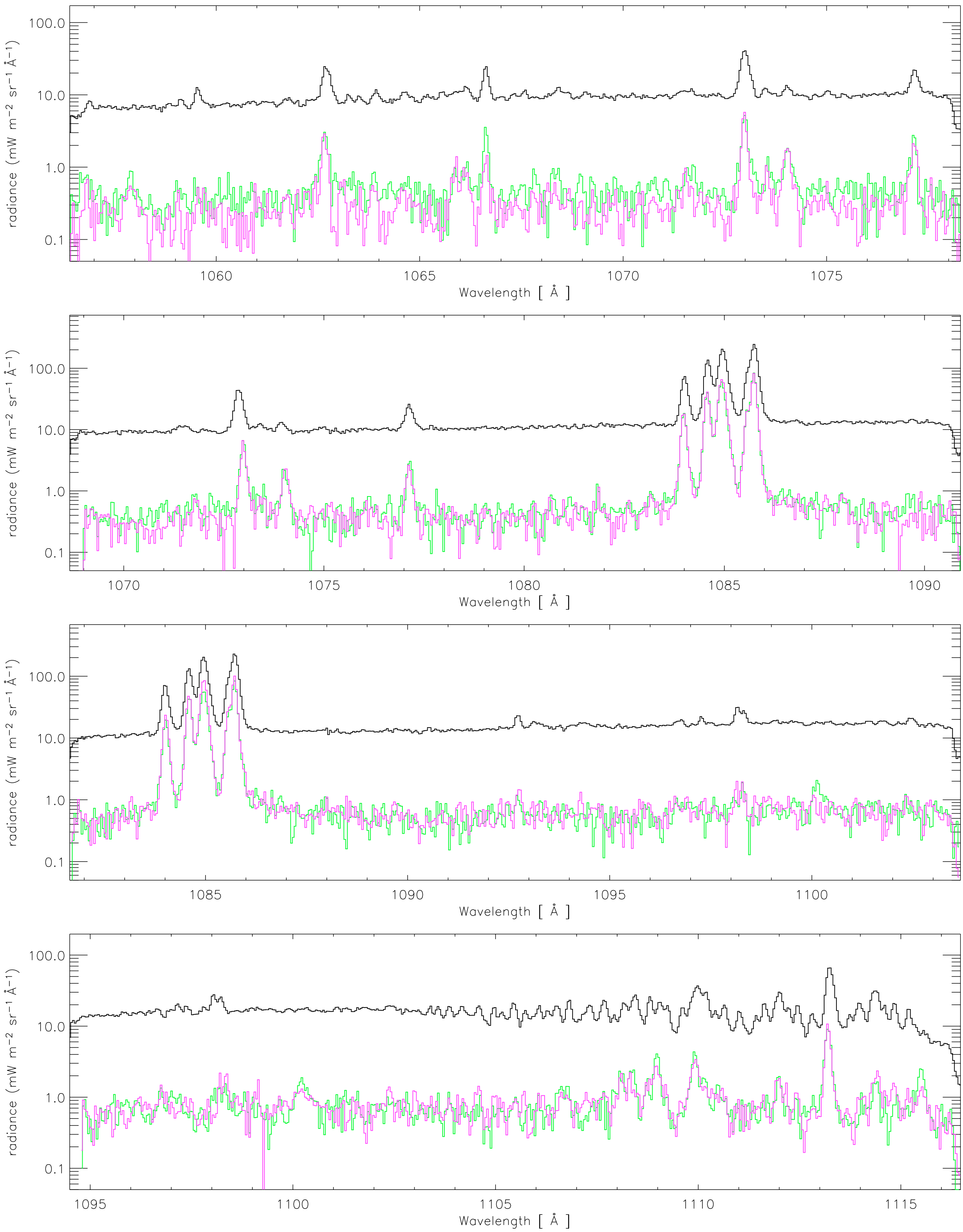


**Fig. 9.** QS and prominence spectra as they appear on the KBr section of the detector.

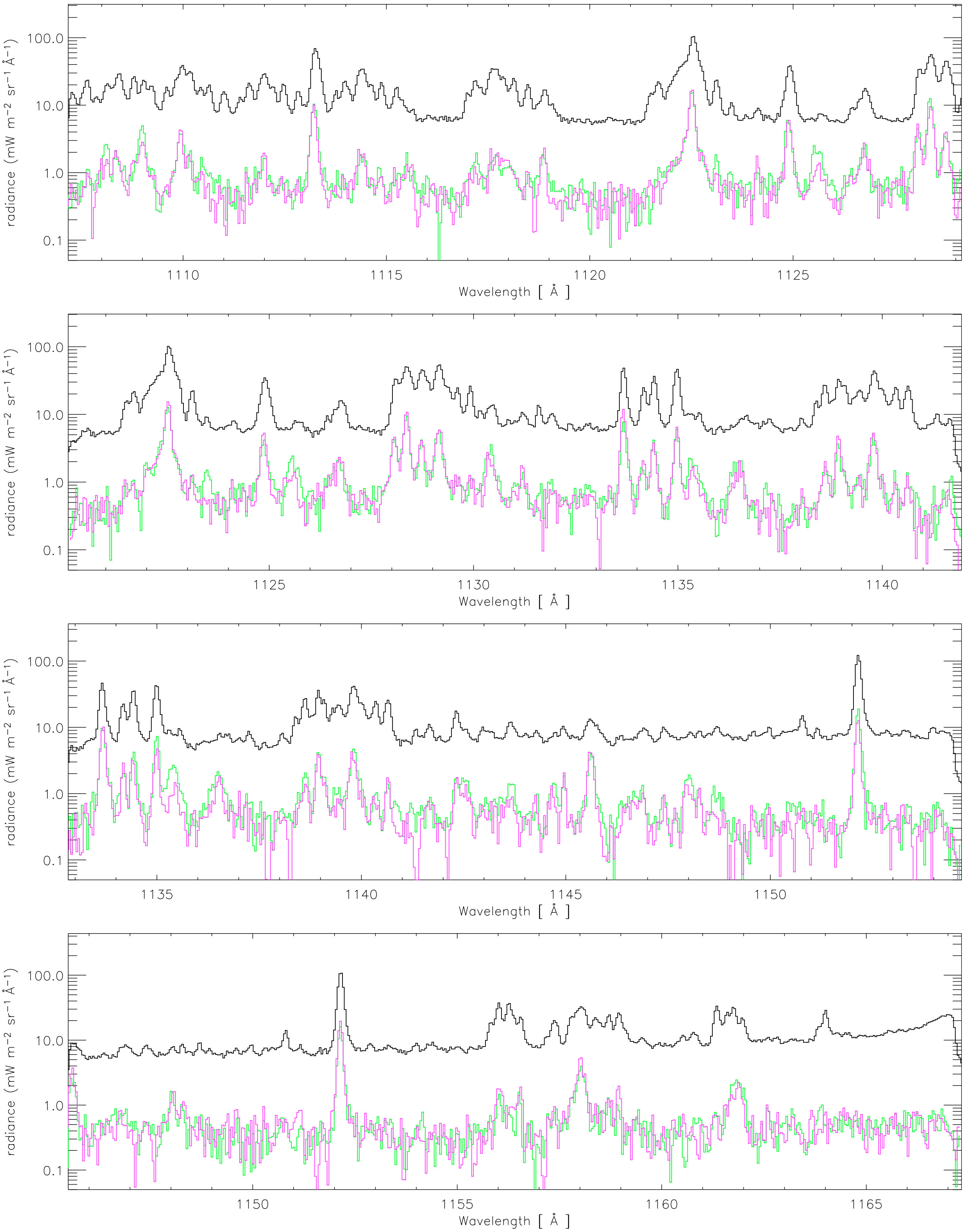


**Fig. 10.** QS and prominence spectra as they appear on the KBr section of the detector.

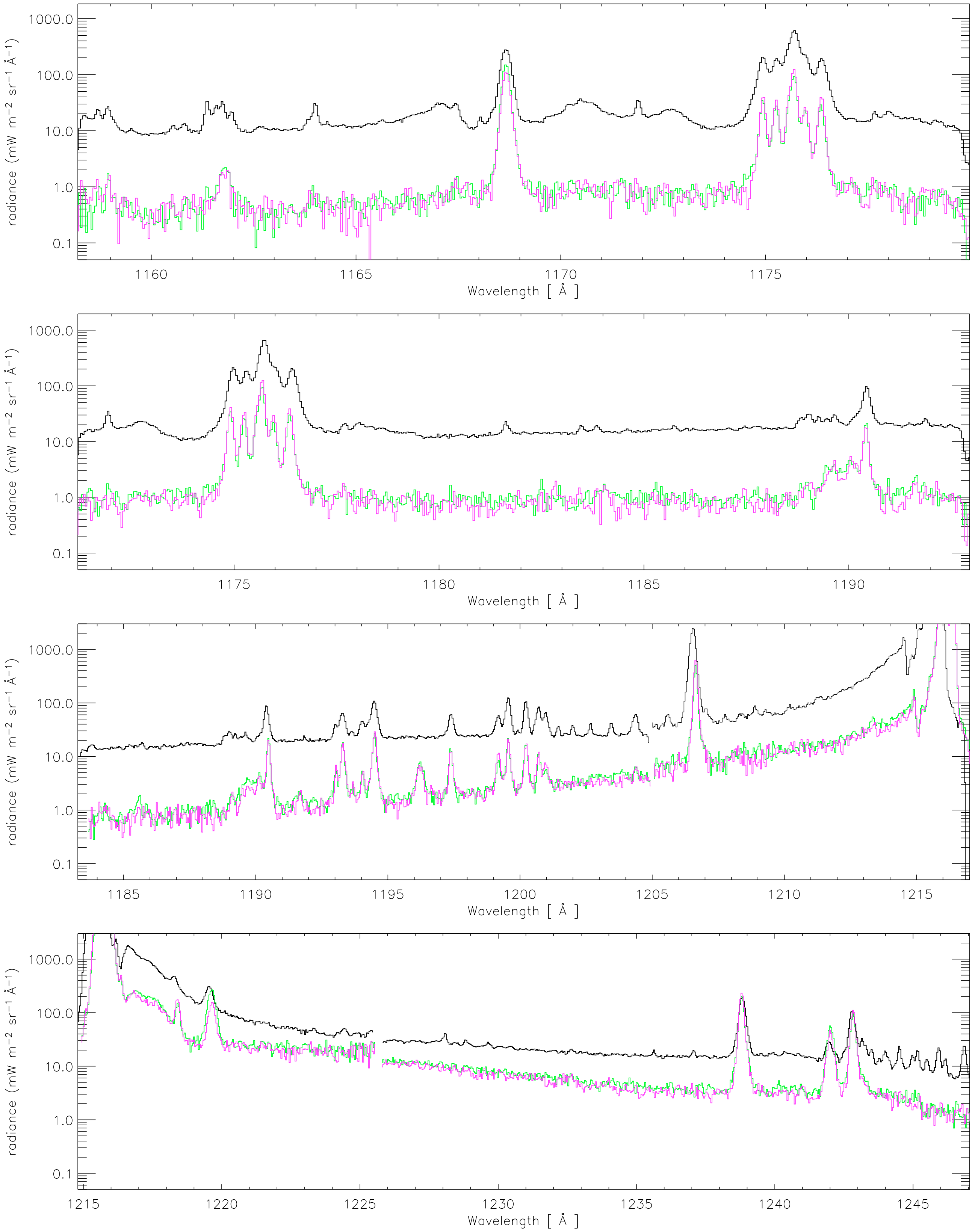


**Fig. 11.** The first two panels show the QS and prominence spectra as they appear on the KBr part of the detector. The last two panels also include part of the bare detector (starting at 1205 Å for the first panel and finishing at 1225.5 Å in the second one) to show the H-Lyman($\alpha$) wings and the lines liening on top of them. The limits between the two detector sections are marked by a gap in the data.

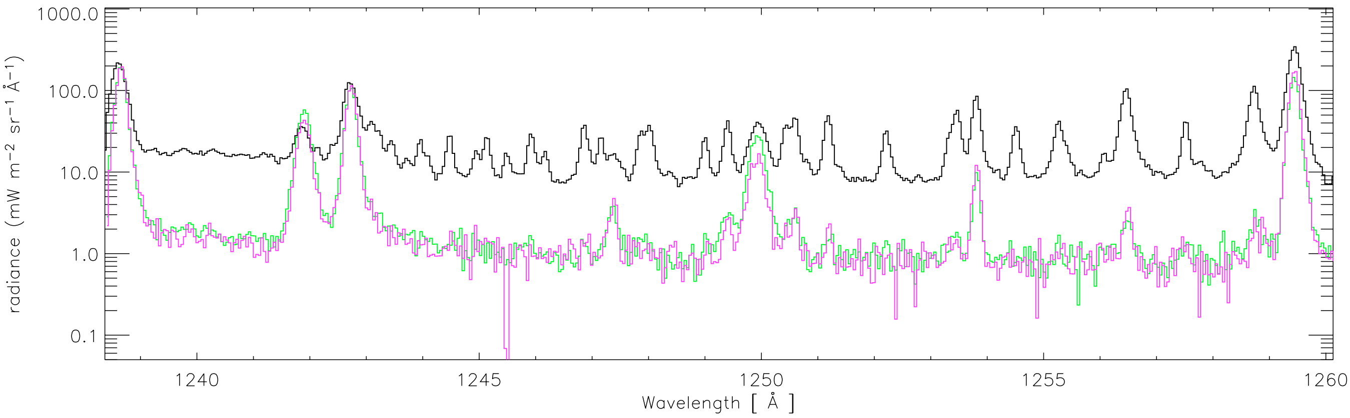


**Fig. 12.** QS and prominence spectra as they appear on the KBr section of the detector.

**Table 1.** Results from the fitting procedure. The first two columns indicate the ion identified and its reference position. For each line observed, we report the measured position ($\lambda_{\rm obs}$ in Å, third column QS, sixth, and ninth columns for A_1 and A_2), the radiance (I in $mW\ m^{-2}\ sr^{-1}\ A^{-1}$, fourth column for QS, seventh and tenth columns for A_1 and A_2), and the *FWHM* (Å, fifth column for QS, eighth and eleventh columns for A_1 and A_2). The "**" in the first column marks the blended lines. The symbol "/2" indicates a second order line, while the "(2)" is used for the unresolved doublet. The letters at the side of the observed position indicate the nature of the lines that were used to calculate the errors in the Gaussian parameters: "b" (blended lines), "i" (intense line), and "w" (weak line). The † at the side of the line intensity indicates that the central intensity is below $3\sigma$ of the background. See text for more details.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_{\rm t}$ | $\lambda_{\rm obs}$ | *I* | *FWHM* | $\lambda_{\rm obs}$ | *I* | *FWHM* | $\lambda_{\rm obs}$ | *I* | *FWHM* |
| O II | 796.6610 | 796.661 | 2.837 | 0.158 | 796.661 | 0.512 | 0.109 | | | |
| C II | 799.6600 | 799.628 w | 0.520 | 0.098 | | | | | | |
| C II | 799.9440 | 799.966 w | 0.381 | 0.090 | | | | | | |
| C II ** | 806.384 | 806.570 b | 1.469 | 0.302 | | | | | | |
| C II (2) | 806.86 | 806.885 w | 0.542 | 0.148 | | | | | | |
| S IV-C II | 809.6680 | 809.701 b | 1.452 | 0.153 | | | | | | |
| Fe III | 813.3820 | 813.384 w | 0.570 | 0.124 | | | | 813.500 w | 0.188 | 0.119 |
| Si IV | 815.0490 | 815.074 w | 0.769 | 0.147 | | | | 815.192 w | 0.259 | 0.126 |
| S IV | 815.9520 | 815.973 w | 2.056 | 0.205 | 815.776 w | 0.354 | 0.122 | 816.031 w | 0.191 | 0.085 |
| Si IV | 818.1290 | 818.150 w | 1.662 | 0.159 | | | | | | |
| Ca IX | 821.2690 | | | | | | | 821.180 w | 0.264 | 0.141 |
| | | 822.554 | 1.545 | 0.383 | 822.254 | 0.308 | 0.193 | 822.446 | 0.084 | 0.070 |
| O II | 832.7620 | 832.749 i | 5.577 | 0.140 | 832.764 w | 0.961 | 0.092 | 832.764 i | 1.031 | 0.099 |
| O III | 832.9270 | 832.925 i | 8.489 | 0.183 | 832.910 w | 0.823 | 0.155 | 832.923 i | 0.732 | 0.149 |
| O II | 833.3320 | 833.328 i | 13.716 | 0.170 | 833.326 i | 2.323 | 0.113 | 833.325 i | 2.088 | 0.120 |
| O III ** (*) | 833.7100 | | | | 833.622 b | 0.288† | 0.089 | | | |
| O III | 833.7420 | 833.751 i | 23.486 | 0.177 | 833.771 i | 1.610 | 0.151 | 833.750 i | 1.299 | 0.117 |
| O II | 834.4620 | 834.460 i | 19.403 | 0.171 | 834.461 i | 3.273 | 0.138 | 834.460 i | 3.256 | 0.133 |
| O III | 835.0960 | 835.081 i | 7.078 | 0.178 | 835.115 w | 0.415 | 0.105 | 834.957 w | 0.080† | 0.122 |
| O III | 835.2920 | 835.291 i | 31.061 | 0.174 | 835.290 i | 2.666 | 0.141 | 835.286 i | 2.505 | 0.137 |
| Fe III (*) | 839.9810 | 839.904 w | 0.395 | 0.130 | | | | | | |
| Fe III (*) | 840.5180 | 840.530 w | 0.218 | 0.076 | | | | | | |
| Fe III (*) | 844.2840 | 844.285 w | 0.457 | 0.119 | | | | | | |
| Fe III (*) | 845.4080 | 845.483 w | 0.317 | 0.112 | | | | | | |
| S V | 849.2400 | 849.241 w | 0.319 | 0.096 | | | | 849.256 w | 0.175 | 0.059 |
| | | 850.239 | 0.292 | 0.082 | | | | | | |
| Ar IV | 850.5980 | 850.597 w | 0.626 | 0.132 | | | | | | |
| Fe III (*) | 851.1500 | 851.191 w | 0.226 | 0.095 | | | | | | |
| | 851.3320 | 851.558 w | 0.657 | 0.149 | | | | | | |
| S V | 852.1780 | 852.239 w | 0.354 | 0.111 | | | | | | |
| S IV (*) | 852.711 | 852.708 w | 0.766 | 0.217 | | | | | | |
| Mg VII | 854.7240 | 854.684 w | 0.532 | 0.085 | 854.743 w | 0.186 | 0.058 | 854.446 w | 0.348 | 0.143 |
| S V (2) | 854.8700 | 854.844 w | 0.680 | 0.130 | | | | 854.884 w | 0.218 | 0.098 |
| Fe III (*) | 855.4410 | 855.378 w | 0.225 | 0.081 | | | | 855.279 w | 0.343 | 0.123 |
| Al III(?)(*) | 856.7470 | 856.767 w | 0.739 | 0.166 | | | | 856.790 w | 0.219 | 0.077 |
| Fe III (*) | 857.3920 | 857.335 w | 0.502 | 0.140 | | | | | | |
| Fe III (*) | 857.6900 | 857.581 w | 0.349 | 0.123 | | | | | | |
| C II | 858.0918 | 858.095 i | 1.838 | 0.160 | 858.157 w | 0.434 | 0.180 | 858.102 w | 0.281 | 0.089 |
| C II | 858.5590 | 858.556 i | 3.341 | 0.175 | 858.603 w | 0.262 | 0.076 | 858.574 w | 0.417 | 0.136 |
| Fe III (2) | 859.7210 | 859.703 i | 1.798 | 0.199 | | | | | | |
| Fe III (2) | 861.8320 | 861.775 w | 1.121 | 0.211 | | | | | | |
| Fe III | 864.0340 | 864.198 w | 0.516 | 0.119 | | | | 864.090 w | 0.142 | 0.087 |
| Mg VII | 868.1930 | 868.191 w | 0.404 | 0.107 | 868.195 w | 0.374 | 0.106 | 868.187 w | 0.268 | 0.082 |
| Na VII | 869.537 | 869.624 w | 0.421 | 0.153 | 869.690 w | 0.179 | 0.090 | | | |
| S IX ** | 871.7270 | | | | 871.605 b | 0.350 | 0.126 | | | |
| Ar VII | 877.9200 | | | | 877.666 w | 0.512 | 0.125 | | | |
| | | 880.962 | 0.555 | 0.166 | 881.036 | 0.377 | 0.106 | | | |
| Ne VII | 895.1800 | 895.179 i | 7.082 | 0.213 | 894.964 i | 1.243 | 0.219 | | | |
| | | 902.547 | 0.635 | 0.160 | | | | | | |
| C II | 903.6235 | 903.624 i | 4.156 | 0.167 | 903.642 i | 0.686 | 0.127 | | | |
| C II | 903.9616 | 903.949 i | 3.158 | 0.135 | 903.947 w | 0.511 | 0.157 | 903.980 i | 0.476 | 0.100 |
| C II | 904.1416 | 904.135 i | 10.148 | 0.177 | 904.135 i | 1.121 | 0.132 | 904.129 i | | |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| 1.312 | 0.136 | | | | | | | | | |
| C II | 904.4801 | 904.482(?) i | 2.144 | 0.154 | 904.483 w | 0.364 | 0.112 | 904.613 i | 0.674 | 0.313 |
| H I Ly 21 | 913.826 | | | | 913.800 | 2.099 | 0.174 | 913.797 | 4.013 | 0.269 |
| H I Ly 20 | 913.480 | | | | 913.611 | 2.034 | 0.152 | 913.586 | 2.176 | 0.131 |
| H I Ly 19 | 914.0390 | 914.023 | 5.690 | 0.180 | 914.020 | 1.944 | 0.161 | 914.035 | 2.466 | 0.164 |
| H I Ly 18 | 914.2860 | 914.272 | 11.540 | 0.252 | 914.272 | 2.038 | 0.188 | 914.272 | 2.744 | 0.173 |
| H I Ly 17 | 914.5760 | 914.534 | 9.563 | 0.208 | 914.555 | 2.106 | 0.174 | 914.557 | 3.033 | 0.183 |
| H I Ly 16 | 914.9190 | 914.869 | 11.803 | 0.253 | 914.896 | 2.366 | 0.217 | 914.896 | 3.288 | 0.187 |
| H I Ly 15 | 915.3290 | 915.262 | 11.245 | 0.235 | 915.319 | 2.003 | 0.161 | 915.310 | 3.411 | 0.201 |
| N II ** | 915.6120 | 915.678 i | 11.011 | 0.319 | 915.582 w | 0.334 | 0.125 | 915.589 i | 0.719 | 0.161 |
| H I Ly 14 ** | 915.8240 | 915.897 | 10.051 | 0.262 | 915.799 | 2.647 | 0.191 | 915.807 | 3.423 | 0.181 |
| N II (2) ** | 916.0130 | | | | 916.005 b | 1.054 | 0.161 | 915.994 b | 1.676 | 0.138 |
| H I Ly 13 | 916.4290 | 916.352 | 11.809 | 0.235 | 916.413 | 2.456 | 0.180 | 916.412 | 3.431 | 0.165 |
| N II (2) | 916.7010 | 916.703 i | 8.034 | 0.193 | 916.695 i | 1.229 | 0.126 | 916.681 i | 2.024 | 0.135 |
| H I Ly 12 | 917.1810 | 917.179 | 12.713 | 0.271 | 917.169 | 2.969 | 0.191 | 917.166 | 3.670 | 0.198 |
| H I Ly 11 | 918.1290 | 918.129 | 13.283 | 0.274 | 918.128 | 3.537 | 0.204 | 918.120 | 4.140 | 0.194 |
| O I | 918.7260 | 918.795 w | 0.379 | 0.190 | | | | 918.745 w | 0.055 | 0.080 |
| Si VII | 918.850 | 918.950 w | 0.428 | 0.205 | 918.968 w | 0.109 | 0.211 | 918.939 w | 0.193 | 0.201 |
| H I Ly 10 | 919.3500 | 919.351 | 13.652 | 0.258 | 919.339 | 3.450 | 0.188 | 919.338 | 4.515 | 0.190 |
| O I | 919.6580 | 919.668 i | 1.246 | 0.143 | 919.604 w | 0.232 | 0.218 | 919.659 i | 0.325 | 0.200 |
| O I (2) | 919.9080 | 919.912 w | 0.454 | 0.150 | | | | | | |
| | | 920.645 | 0.541 | 0.154 | 920.568 | 0.086 | 0.154 | 920.558 | 0.184 | 0.137 |
| H I Ly 9 | 920.9630 | 920.954 | 14.804 | 0.267 | 920.948 | 3.898 | 0.203 | 920.940 | 4.813 | 0.208 |
| O I (*) | 921.2470 | 921.348 w | 0.382 | 0.097 | | | | | | |
| O I | 921.5750 | 921.564 w | 0.648 | 0.163 | 921.550 w | 0.108 | 0.133 | 921.568 w | 0.250 | 0.140 |
| O I | 921.8600 | 921.905 i | 1.991 | 0.187 | 921.925 w | 0.101 | 0.117 | | | |
| O I ** | 922.0727 | 922.010 b | 1.908 | 0.139 | 922.029 b | 0.158 | 0.132 | 921.992 b | 0.380 | 0.193 |
| O I-N IV | 922.4600 | 922.520 b | 0.940 | 0.181 | 922.502 b | 0.145 | 0.159 | 922.518 b | 0.209 | 0.158 |
| | | 922.760 | 0.679 | 0.154 | 922.754 | 0.248 | 0.179 | 922.747 | 0.273 | 0.170 |
| H I Ly 8 ** | 923.0000 | 923.155 | 19.251 | 0.282 | 923.154 | 4.832 | 0.216 | 923.139 | 5.973 | 0.224 |
| O I-N IV | 923.7900 | 923.700 b | 0.901 | 0.279 | 923.630 b | 0.057 | 0.279 | 923.630 b | 0.135 | 0.279 |
| S VII - S V ** | 924.06 | 924.121 w | 0.534 | 0.127 | 924.130 w | 0.181 | 0.133 | 924.096 w | 0.058 | 0.110 |
| N IV ** | 924.2830 | 924.266 i | 1.015 | 0.176 | 924.279 w | 0.207 | 0.145 | 924.195 i | 0.531 | 0.232 |
| O I | 924.9520 | 924.959 i | 1.184 | 0.130 | 924.975 w | 0.072 | 0.161 | | | |
| O I | 925.4420 | 925.496 w | 0.418 | 0.125 | | | | | | |
| He II | 925.8000 | 925.862 w | 0.810 | 0.159 | 925.850 w | 0.225 | 0.179 | | | |
| H I Ly 7 | 926.2260 | 926.286 | 21.111 | 0.293 | 926.237 | 5.887 | 0.216 | 926.229 | 6.864 | 0.232 |
| O I (2) | 926.8090 | 926.890 i | 1.273 | 0.289 | 926.856 w | 0.070 | 0.204 | | | |
| | | 927.227 | 0.132 | 0.106 | | | | | | |
| O I | 927.3940 | 927.421 w | 0.124 | 0.112 | | | | | | |
| He II | 927.8600 | 927.883 w | 0.777 | 0.192 | 927.850 w | 0.239 | 0.138 | 927.846 i | 0.465 | 0.153 |
| O I | 929.5168 | 929.515 i | 1.797 | 0.140 | 929.503 w | 0.077 | 0.098 | 929.495 w | 0.162 | 0.140 |
| Fe III | 930.0860 | 930.090 w | 0.128 | 0.099 | 930.171 w | 0.041 | 0.123 | | | |
| O I-He II | 930.2566 | 930.314 b | 1.838 | 0.184 | 930.355 b | 0.351 | 0.169 | 930.315 b | 0.417 | 0.148 |
| H I Ly 6 | 930.7480 | 930.768 | 26.878 | 0.314 | 930.748 | 7.665 | 0.246 | 930.741 | 8.767 | 0.283 |
| O I | 931.4820 | 931.459 w | 0.752 | 0.172 | 931.482 w | 0.104 | 0.254 | 931.459 w | 0.083 | 0.209 |
| O I | 931.6282 | 931.621 w | 0.654 | 0.188 | | | | | | |
| O I | 932.2249 | 932.227 w | 0.238 | 0.148 | 932.197 w | 0.029 | 0.100 | | | |
| S VI | 933.3800 | 933.416 i | 9.962 | 0.175 | 933.392 i | 2.554 | 0.162 | 933.395 i | 2.859 | 0.152 |
| Fe III | 934.7030 | 934.751 w | 0.061 | 0.105 | | | | | | |
| O I | 935.1930 | 935.188 w | 0.377 | 0.129 | | | | 935.191 w | 0.063 | 0.172 |
| Mg IV (*) | 936.2880 | | | | | | | 936.284 w | 0.019 | 0.082 |
| O I | 936.6295 | 936.633 i | 2.018 | 0.136 | 936.629 w | 0.105 | 0.095 | 936.610 w | 0.175 | 0.128 |
| He II | | 937.233 i | 1.005 | 0.278 | | | | 937.380 i | 0.569 | 0.127 |
| S II (2) | 937.6900 | 937.414 i | 1.753 | 0.122 | 937.405 w | 0.381 | 0.171 | 937.376 i | 0.561 | 0.128 |
| H I Ly 5 | 937.8030 | 937.830 | 37.064 | 0.326 | 937.814 | 11.475 | 0.273 | 937.800 | 13.250 | 0.312 |
| O I | 938.6249 | 938.630 i | 1.339 | 0.159 | 938.504 w | 0.080 | 0.180 | 938.630 w | 0.126 | 0.177 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_{\mathrm{t}}$ | $\lambda_{\mathrm{obs}}$ | *I* | *FWHM* | $\lambda_{\mathrm{obs}}$ | *I* | *FWHM* | $\lambda_{\mathrm{obs}}$ | *I* | *FWHM* |
| O I | 939.2346 | 939.246 w | 0.838 | 0.152 | | | | | | |
| O I | 939.8412 | 939.847 w | 0.384 | 0.167 | | | | | | |
| | | 941.450 | 0.220 | 0.191 | | | | | | |
| He II | 942.5380 | 942.491 i | 1.548 | 0.166 | 942.520 w | 0.521 | 0.153 | 942.518 i | 0.723 | 0.162 |
| | | 943.857 | 0.168 | 0.203 | | | | | | |
| Si VIII ** | 944.4670 | 944.319 b | 1.133 | 0.160 | 944.351 b | 5.039 | 0.211 | 944.343 b | 2.879 | 0.214 |
| S VI ** | 944.5240 | 944.541 b | 4.755 | 0.188 | 944.558 b | 1.699 | 0.177 | 944.549 b | 1.492 | 0.178 |
| C I | 945.1910 | 945.178 w | 0.288 | 0.161 | | | | | | |
| C I | 945.3380 | 945.330 w | 0.252 | 0.130 | 945.295 w | 0.141 | 0.231 | 945.348 w | 0.065 | 0.142 |
| C I | 945.5790 | 945.565 w | 0.396 | 0.170 | 945.576 w | 0.077 | 0.118 | 945.664 w | 0.088 | 0.218 |
| C II | 945.9770 | 945.950 w | 0.152 | 0.122 | 945.969 w | 0.085 | 0.175 | 946.001 w | 0.094 | 0.150 |
| Fe III ** (*) | 946.056 | 946.175 b | 0.350 | 0.188 | 946.120 b | 0.044 | 0.098 | | | |
| C II ** | 946.1980 | 946.185 b | 0.380 | 0.183 | 946.218 b | 0.123 | 0.121 | 946.230 b | 0.260 | 0.130 |
| S X ** | 946.28 | | | | 946.368 b | 0.206 | 0.180 | 946.449 b | 0.099 | 0.177 |
| Fe III | 948.3220 | 948.364 w | 0.191 | 0.209 | | | | 948.327 w | 0.067 | 0.194 |
| O I | 948.6855 | 948.686 i | 2.732 | 0.146 | 948.669 w | 0.129 | 0.064 | 948.705 w | 0.264 | 0.139 |
| He II -Si VIII | 949.3540 | 949.342 b | 4.565 | 0.264 | 949.276 b | 3.472 | 0.279 | 949.293 b | 2.700 | 0.280 |
| H I Ly 4 | 949.7430 | 949.754 | | | 949.788 | | | 949.780 | | |
| O I-Si IX | 950.1121 | 950.110 b | 4.973 | 0.208 | 950.141 b | 3.529 | 0.260 | 950.086 b | 2.055 | 0.246 |
| Fe III | 950.3340 | 950.272 i | 2.423 | 0.280 | 950.177 i | 2.968 | 0.267 | 950.193 i | 1.570 | 0.328 |
| O I-Fe III | 950.77327 | 950.719 b | 2.425 | 0.181 | 950.672 b | 0.283 | 0.269 | 950.754 b | 0.214 | 0.218 |
| O I | 952.3178 | 952.322 w | 0.891 | 0.192 | | | | 952.336 w | 0.052† | 0.190 |
| O I | 952.9413 | 952.939 w | 0.424 | 0.141 | | | | | | |
| N I | 953.4150 | 953.413 w | 0.284 | 0.147 | 953.508 w | 0.069† | 0.354 | | | |
| N I | 953.6548 | 953.637 w | 0.285 | 0.116 | | | | 953.693 w | 0.040 | 0.077 |
| N I | 953.9698 | 953.935 w | 0.290 | 0.177 | 953.959 w | 0.083 | 0.185 | 953.955 w | 0.033† | 0.173 |
| N IV ** | 955.3350 | 955.333 b | 0.173 | 0.193 | 955.260 b | 0.046 | 0.119 | 955.320 b | 0.071 | 0.146 |
| N I (*) | 955.4376 | 955.529 w | 0.097† | 0.155 | | | | | | |
| (d) | 955.8814 | | | | 955.867 w | 0.044 | 0.100 | | | |
| He II | 958.7240 | 958.705 i | 2.576 | 0.163 | 958.764 w | 0.536 | 0.150 | 958.708 i | 1.236 | 0.162 |
| | | 958.850 | 0.344 | 0.200 | | | | | | |
| Fe III | 959.5520 | 959.574 w | 0.136 | 0.180 | 959.524 w | 0.141 | 0.232 | 959.586 w | 0.133 | 0.308 |
| Fe III | 961.9010 | 961.917 w | 0.101† | 0.138 | | | | | | |
| O III (*) | 962.4230 | 962.451 w | 0.145 | 0.149 | 962.354 w | 0.046 | 0.118 | 962.372 w | 0.037† | 0.152 |
| Fe III-N I | 963.8800 | 964.008 | 0.400 | 0.155 | 963.942 b | 0.074 | 0.196 | | | |
| | | | | | | | | 964.218 | 0.018 | 0.070 |
| N I | 964.6258 | 964.631 w | 0.336 | 0.169 | | | | 964.600 w | 0.032† | 0.214 |
| N I | 965.0415 | 965.042 w | 0.140 | 0.099 | 965.166 w | 0.203 | 0.312 | 965.163 w | 0.077 | 0.128 |
| Fe III-Si V | 967.1970 | 967.161 b | 0.158 | 0.106 | 967.198 b | 0.046 | 0.117 | | | |
| Fe III | 968.9550 | 968.896 w | 0.123 | 0.127 | 968.929 w | 0.050 | 0.104 | 968.904 w | 0.057 | 0.179 |
| Fe III | 969.9540 | 969.964 w | 0.041 | 0.069 | | | | 969.970 w | 0.044 | 0.135 |
| | | 971.379 | 2.523 | 0.280 | 971.502 | 0.301 | 0.250 | | | |
| O I | 971.7390 | 971.775 i | 4.658 | 0.182 | 971.748 i | 0.836 | 0.143 | 971.743 i | 0.423 | 0.152 |
| He II (2) | 972.1380 | 972.144 i | 4.642 | 0.153 | 972.131 i | 3.516 | 0.209 | 972.164 i | 2.250 | 0.242 |
| H I | 972.5380 | 972.450 | | | 972.472 | | | 972.600 | | |
| O I | 973.2342 | 973.254 i | 1.975 | 0.105 | 973.263 i | 1.164 | 0.246 | 973.213 i | 0.564 | 0.268 |
| Ne VII | 973.3300 | 973.136 w | 0.878 | 0.099 | | | | 973.353 i | 0.329 | 0.245 |
| O I | 973.8852 | 973.893 i | 1.311 | 0.123 | 973.896 w | 0.460 | 0.168 | | | |
| O I | 976.4480 | 976.460 i | 4.927 | 0.238 | | | | 976.445 i | 0.328 | 0.278 |
| C III | 977.020 | 977.042 i | 518.548 | 0.177 | 977.030 i | 211.913 | 0.140 | 977.029 i | 120.567 | 0.136 |
| O I | 977.9594 | 977.937 i | 4.433 | 0.200 | 977.949 i | 0.586 | 0.250 | | | |
| O I | 978.6170 | 978.585 i | 1.339 | 0.213 | 978.644 w | 0.238 | 0.121 | | | |
| Fe III | 979.0320 | 978.912 w | 0.404 | 0.156 | 979.103 w | 0.340 | 0.212 | | | |
| O I (*) | 979.2720 | 979.163 w | 0.349 | 0.204 | 979.330 w | 0.312 | 0.228 | | | |
| N III (2) | 979.8420 | 979.879 w | 0.159 | 0.182 | 979.940 w | 0.185 | 0.277 | 979.882 w | 0.122 | 0.219 |
| Fe III | 981.3730 | 981.331 w | 0.428 | 0.122 | 981.358 w | 0.134 | 0.208 | 981.386 w | 0.068 | 0.102 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| Si VIII | 982.1750 | | | | 982.115 w | 0.016† | 0.061 | | | |
| Si VIII | 983.5760 | | | | 983.598 w | 0.063 | 0.172 | 983.520 w | 0.074† | 0.272 |
| Fe III | 983.9090 | 983.915 i | 4.173 | 0.198 | 983.875 w | 0.105 | 0.160 | 983.884 w | 0.056 | 0.029 |
| | | | | | 984.520 | 0.039 | 0.137 | | | |
| Fe III | 985.8240 | 985.772 w | 0.300 | 0.112 | 985.812 w | 0.053 | 0.119 | 985.845 w | 0.059† | 0.169 |
| O VI (*) | 986.3508 | | | | 986.258 w | 0.084 | 0.116 | 986.367 w | 0.072† | 0.283 |
| Fe III | 986.6370 | 986.542 w | 0.103† | 0.194 | | | | | | |
| Na VI ** | 988.6130 | 988.640 b | 9.208 | 0.217 | 988.720 b | 1.745 | 0.179 | 988.658 b | 0.378 | 0.130 |
| O I ** | 988.7734 | 988.755 b | 3.738 | 0.121 | 988.802 b | 1.338 | 0.105 | 988.793 b | 1.140 | 0.140 |
| N III | 989.7900 | 989.843 i | 11.454 | 0.184 | 989.849 i | 2.852 | 0.158 | 989.840 i | 2.211 | 0.171 |
| O I | 990.2043 | 990.191 i | 8.221 | 0.192 | 990.214 i | 1.741 | 0.170 | 990.197 i | 0.927 | 0.178 |
| O I | 990.8010 | 990.799 i | 3.339 | 0.153 | 990.808 i | 0.625 | 0.146 | 990.792 w | 0.268 | 0.148 |
| Fe III | 991.2320 | 991.290 i | 0.961 | 0.200 | 991.233 w | 0.115 | 0.103 | | | |
| N III | 991.5790 | 991.591 i | 22.748 | 0.184 | 991.612 i | 4.891 | 0.155 | 991.611 i | 3.475 | 0.155 |
| He II (2) | 992.3380 | 992.330 i | 5.592 | 0.182 | 992.401 i | 2.953 | 0.181 | 992.391 i | 1.897 | 0.179 |
| Si II | 992.6829 | 992.647 i | 1.655 | 0.209 | 992.707 i | 0.540 | 0.135 | 992.681 i | 0.405 | 0.159 |
| Fe III - Ne VI | 993.0800 | 993.063 b | 0.615 | 0.225 | 993.125 b | 0.067 | 0.104 | 993.076 b | 0.070 | 0.086 |
| Si III | 993.5100 | 993.560 w | 0.270 | 0.243 | 993.487 w | 0.041 | 0.036 | 993.556 w | 0.047† | 0.202 |
| Fe III ** | 994.2570 | 994.133 b | 1.710 | 0.290 | 994.234 b | 0.115 | 0.233 | 994.263 b | 0.038† | 0.217 |
| Si VIII | 994.5810 | 994.237 i | 1.064 | 0.284 | 994.482 w | 0.074 | 0.130 | 994.522 w | 0.028† | 0.112 |
| Fe III | 994.7240 | 994.753 w | 0.729 | 0.220 | 994.644 w | 0.117 | 0.119 | 994.730 w | 0.166 | 0.227 |
| Fe III | 995.1500 | 995.140 w | 0.225 | 0.171 | 995.151 w | 0.054 | 0.122 | | | |
| | | 995.727 | 0.040 | 0.088 | | | | | | |
| S II | 996.0000 | 995.974 w | 0.722 | 0.153 | 996.029 w | 0.069 | 0.122 | 996.029 w | 0.060 | 0.103 |
| Fe III | 997.0810 | 997.065 w | 0.522 | 0.189 | 997.023 w | 0.032 | 0.087 | 997.083 w | 0.074 | 0.060 |
| Si III | 997.3890 | 997.363 w | 0.787 | 0.213 | 997.189 w | 0.130 | 0.166 | 997.178 w | 0.073 | 0.153 |
| Fe III | 997.5990 | 997.516 w | 0.341 | 0.232 | 997.431 w | 0.074 | 0.118 | 997.420 w | 0.046 | 0.075 |
| Fe III (*) | 997.794 | 997.842 w | 0.091† | 0.149 | | | | | | |
| Si XII/2 | 499.4066 | 998.732 w | 37.228 | 0.139 | 998.860 w | 13.127 | 0.065 | 998.797 w | 12.251 | 0.087 |
| Ne VI ** | 999.1820 | 999.238 b | 0.824 | 0.152 | 999.307 b | 0.547 | 0.165 | 999.307 b | 0.337 | 0.182 |
| O I-Fe III | 999.4974 | 999.443 b | 4.573 | 0.149 | 999.525 b | 0.533 | 0.133 | 999.523 b | 0.256 | 0.153 |
| Ar VI | 1000.1600 | 1000.149 i | 1.047 | 0.195 | 1000.196 w | 0.089 | 0.194 | 1000.216 w | 0.031 | 0.075 |
| S II | 1000.4860 | 1000.452 w | 0.557 | 0.158 | 1000.483 w | 0.035 | 0.097 | 1000.507 w | 0.056 | 0.107 |
| S II | 1000.7500 | 1000.778 w | 0.073† | 0.193 | 1000.665 w | 0.028 | 0.082 | 1000.802 w | 0.023† | 0.083 |
| | | 1001.494 | 0.052 | 0.063 | 1001.663 | 0.012 | 0.090 | 1001.457 | 0.022 | 0.082 |
| Fe III | 1005.106 | 1005.059 w | 0.031† | 0.081 | | | | | | |
| Si III | 1005.349 | | | | 1005.300 w | 0.039 | 0.133 | | | |
| Ne VI | 1005.69 | 1005.722 w | 0.523 | 0.208 | 1005.814 w | 0.405 | 0.198 | 1005.788 w | 0.196 | 0.140 |
| N III ** | 1005.977 | 1006.016 b | 0.507 | 0.186 | | | | | | |
| S II ** | 1006.093 | 1006.159 b | 0.432 | 0.247 | 1006.130 b | 0.079 | 0.140 | 1006.131 b | 0.098 | 0.240 |
| ** | | 1008.735 | 1.241 | 0.378 | 1008.701 | 0.023 | 0.085 | | | |
| ** | | 1008.943 | 1.229 | 0.219 | 1009.000 | 0.172 | 0.240 | 1009.000 | 0.071 | 0.240 |
| ** | | 1009.159 | 0.495 | 0.240 | | | | | | |
| C II | 1009.858 | 1009.830 i | 1.080 | 0.178 | 1009.845 w | 0.178 | 0.153 | 1009.888 w | 0.109 | 0.160 |
| C II - Fe III | 1010.005 | 1010.060 b | 2.315 | 0.212 | 1010.079 b | 0.326 | 0.157 | 1010.097 b | 0.185 | 0.170 |
| C II - Ne VI | 1010.371 | 1010.363 b | 3.319 | 0.205 | 1010.378 b | 0.557 | 0.161 | 1010.371 b | 0.343 | 0.145 |
| | | 1012.125 | 0.067 | 0.088 | | | | | | |
| Fe III ** | 1012.411 | 1012.398 b | 0.287 | 0.158 | | | | | | |
| S III ** | 1012.494 | 1012.653 b | 0.067 | 0.074 | | | | 1012.532 b | 0.121 | 0.327 |
| S II | 1014.42 | 1014.434 w | 0.310 | 0.147 | 1014.469 w | 0.062 | 0.157 | | | |
| S III (2) | 1015.51 | 1015.520 i | 0.879 | 0.224 | 1015.547 w | 0.182 | 0.182 | 1015.600 w | 0.080 | 0.160 |
| S III | 1015.76 | 1015.771 w | 0.565 | 0.195 | 1015.754 w | 0.095 | 0.101 | 1015.826 w | 0.053 | 0.131 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| | | | | | 1015.960 | 0.104 | 0.171 | | | |
| Fe III | 1017.254 | 1017.251 i | 1.084 | 0.233 | 1017.285 w | 0.166 | 0.204 | 1017.267 w | 0.122 | 0.163 |
| Fe III | 1017.745 | 1017.744 i | 0.931 | 0.232 | 1017.746 w | 0.122 | 0.171 | 1017.732 w | 0.049† | 0.163 |
| Fe III | 1018.286 | | | | | | | 1018.300 w | 0.061 | 0.120 |
| Ar XII | 1018.726 | | | | 1018.882 w | 0.411 | 0.311 | 1018.902 w | 0.255 | 0.244 |
| Fe III | 1019.789 | 1019.806 w | 0.118 | 0.100 | 1019.728 w | 0.019† | 0.123 | 1019.906 w | 0.018† | 0.117 |
| S III ** | 1021.10 | 1021.133 b | 0.672 | 0.199 | 1021.096 b | 0.114 | 0.115 | 1021.092 b | 0.081 | 0.131 |
| S III ** | 1021.32 | 1021.340 b | 1.438 | 0.173 | 1021.303 b | 0.200 | 0.143 | 1021.292 b | 0.194 | 0.130 |
| Fe III ** | 1021.561 | 1021.560 b | 0.317 | 0.248 | 1021.528 b | 0.043 | 0.079 | 1021.480 b | 0.057 | 0.091 |
| | | | | | 1022.575 | 0.061 | 0.079 | | | |
| | | | | | 1022.810 | 0.164 | 0.240 | 1022.682 | 0.038 | 0.100 |
| He II ** | 1025.302 | 1025.200 b | 10.867 | 0.185 | 1025.252 b | 6.689 | 0.186 | 1025.251 b | 4.121 | 0.162 |
| H I Ly-$\beta$ ** | 1025.722 | 1025.745 | | | 1025.719 | | | 1025.726 | | |
| Fe III ** | 1026.790 | 1026.600 b | 8.553 | 0.260 | 1026.778 b | 0.350 | 0.260 | 1026.663 b | 0.313 | 0.260 |
| O I | 1027.4307 | 1027.431 i | 26.295 | 0.180 | 1027.431 i | 3.206 | 0.144 | 1027.431 i | 1.825 | 0.142 |
| O I-Fe X | 1028.145 | 1028.131 b | 9.694 | 0.156 | 1028.074 b | 1.929 | 0.233 | 1028.030 b | 1.351 | 0.199 |
| | | 1028.920 | 0.555 | 0.240 | 1028.972 | 1.221 | 0.239 | 1028.969 | 0.883 | 0.198 |
| | | 1029.223 | 0.211 | 0.240 | 1029.240 | 0.059 | 0.159 | 1029.196 | 0.101 | 0.105 |
| Fe III-S II | 1030.924 | 1030.900 b | 0.657 | 0.260 | 1030.944 b | 0.276 | 0.260 | 1030.936 b | 0.195 | 0.250 |
| S II | 1031.34 | 1031.380 i | 1.249 | 0.240 | 1031.400 i | 0.676 | 0.240 | 1031.400 i | 0.318 | 0.240 |
| O VI | 1031.924 | 1031.959 i | 247.785 | 0.244 | 1031.962 i | 226.541 | 0.231 | 1031.966 i | 147.140 | 0.232 |
| Fe III | 1035.7679 | 1035.808 w | 0.599 | 0.206 | 1035.784 w | 0.183 | 0.187 | 1035.906 w | 0.174 | 0.180 |
| C II | 1036.3367 | 1036.358 i | 33.007 | 0.187 | 1036.374 i | 10.939 | 0.145 | 1036.376 i | 8.229 | 0.140 |
| C II | 1037.0182 | 1037.029 i | 40.009 | 0.193 | 1037.048 i | 12.923 | 0.144 | 1037.050 i | 9.790 | 0.139 |
| O VI | 1037.614 | 1037.641 i | 116.131 | 0.236 | 1037.664 i | 100.991 | 0.224 | 1037.662 i | 66.795 | 0.230 |
| Fe III | 1038.355 | 1038.332 i | 1.130 | 0.240 | 1038.387 w | 0.291 | 0.228 | 1038.332 w | 0.211 | 0.225 |
| O I | 1039.2303 | 1039.245 i | 4.652 | 0.165 | 1039.272 i | 0.736 | 0.136 | 1039.275 i | 0.351 | 0.133 |
| O I | 1040.9425 | 1040.943 i | 3.919 | 0.146 | 1040.932 i | 0.623 | 0.125 | 1040.923 w | 0.225 | 0.111 |
| Si XII/2 | 520.665 | 1041.416 w | 9.989 | 0.063 | 1041.374 w | 6.091 | 0.054 | 1041.339 i | 8.460 | 0.071 |
| O I | 1041.6876 | 1041.673 i | 3.490 | 0.140 | 1041.684 w | 0.329 | 0.161 | 1041.680 w | 0.116 | 0.123 |
| | | 1042.884 | 0.081 | 0.101 | 1042.667 | 0.078 | 0.186 | 1042.590 | 0.027 | 0.094 |
| N I ** | 1043.08 | 1043.080 b | 0.203 | 0.111 | 1043.122 b | 0.034 | 0.107 | 1043.012 | 0.040† | 0.173 |
| N I ** | 1043.166 | 1043.174 b | 0.140 | 0.085 | | | | | | |
| N I | 1044.069 | 1044.054 w | 0.237 | 0.192 | | | | | | |
| He I/2 | 522.2128 | 1044.489 w | 6.605 | 0.107 | | | | 1044.367 w | 2.45 | 0.061 |
| S II-Al IV | 1045.765 | 1045.776 b | 0.448 | 0.146 | 1045.791 b | 0.080 | 0.169 | 1045.800 b | 0.082 | 0.225 |
| | | 1048.206 | 0.434 | 0.203 | 1048.197 | 0.068 | 0.144 | 1048.329 | 0.034 | 0.116 |
| S II ** | 1049.0551 | | | | 1049.195 b | 0.136 | 0.104 | 1049.194 b | 0.033 | 0.091 |
| Si VII ** | 1049.199 | 1049.200 b | 0.288 | 0.256 | 1049.260 b | 0.363 | 0.188 | 1049.317 b | 0.176 | 0.132 |
| S I | 1049.82 | 1049.835 w | 0.291 | 0.186 | 1049.508 w | 0.062 | 0.107 | 1049.763 w | 0.028 | 0.049 |
| S I | 1050.3 | 1050.269 w | 0.724 | 0.130 | 1050.272 w | 0.047 | 0.120 | 1050.359 w | 0.021† | 0.141 |
| | | 1050.492 | 0.395 | 0.189 | | | | | | |
| O III/2 | 525.808 | 1051.618 w | 8.902 | 0.084 | 1051.608 w | 1.273 | 0.046 | 1051.637 w | 1.291 | 0.073 |
| N I | 1052.0820 | 1052.092 w | 0.394 | 0.185 | 1052.145 w | 0.072† | 0.264 | 1052.080 w | 0.022† | 0.116 |
| N I | 1053.0880 | 1053.148 w | 0.184 | 0.089 | 1053.112 w | 0.015 | 0.038 | 1053.021 w | 0.029 | 0.057 |
| N I | 1053.1840 | 1053.260 w | 0.215 | 0.112 | | | | | | |
| ** | | | | | 1053.776 | 0.097 | 0.271 | 1053.813 | 0.048 | 0.140 |
| Al VII ** | 1053.9980 | | | | 1053.938 b | 0.159 | 0.131 | 1053.971 b | 0.074 | 0.175 |
| Ar XII | 1054.687 | 1054.720 w | 0.272 | 0.133 | 1054.610 w | 0.154 | 0.254 | 1054.642 w | 0.122 | 0.175 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| | | 1054.968 | 0.465 | 0.172 | | | | | | |
| Al VII | 1056.917 | | | | 1056.887 w | 0.085 | 0.193 | 1056.948 w | 0.024† | 0.143 |
| Al VIII | 1057.8900 | | | | 1057.875 w | 0.078 | 0.094 | 1057.909 w | 0.084 | 0.204 |
| | | 1059.127 | 0.204 | 0.147 | 1059.041 | 0.017 | 0.090 | 1059.048 | 0.029 | 0.088 |
| Fe II | 1059.5640 | 1059.534 w | 0.832 | 0.145 | 1059.563 w | 0.026 | 0.086 | 1059.590 w | 0.031† | 0.113 |
| Fe III | 1061.1270 | 1061.314 w | 0.251 | 0.192 | | | | 1061.170 w | 0.036 | 0.119 |
| Fe III | 1061.7080 | 1061.769 w | 0.285 | 0.200 | 1061.708 w | 0.043 | 0.125 | 1061.747 w | 0.039† | 0.187 |
| Fe III | 1062.2720 | 1062.390 w | 0.211 | 0.191 | | | | 1062.254 w | 0.030† | 0.105 |
| | | | | | | | | 1062.442 w | 0.047 | 0.086 |
| S IV | 1062.6710 | 1062.754 i | 3.738 | 0.218 | 1062.681 w | 0.478 | 0.187 | 1062.692 i | 0.468 | 0.148 |
| Fe III | 1063.3090 | 1063.391 w | 0.386 | 0.135 | 1063.163 w | 0.077 | 0.107 | 1063.175 w | 0.058† | 0.165 |
| Ar VII -Fe II | 1063.55 | 1063.580 b | 0.238 | 0.120 | 1063.587 b | 0.050 | 0.128 | 1063.628 b | 0.033 | 0.058 |
| Fe III | 1063.8719 | 1063.984 w | 0.578 | 0.160 | 1063.855 w | 0.063 | 0.139 | 1063.885 w | 0.059 | 0.141 |
| Fe III | 1064.6610 | 1064.643 w | 0.699 | 0.221 | | | | 1064.594 w | 0.049† | 0.200 |
| Al IV (*) | 1064.8910 | 1064.836 w | 0.073 | 0.059 | | | | | | |
| | | 1065.567 | 0.609 | 0.217 | | | | | | |
| C II ** | 1065.8914 | 1065.904 b | 0.761 | 0.254 | 1065.875 b | 0.070 | 0.122 | 1065.897 b | 7.056 | 0.052 |
| Fe III | 1066.143 | 1066.175 i | 0.967 | 0.209 | 1066.150 w | 0.104 | 0.150 | 1066.124 w | 0.133 | 0.183 |
| Si IV | 1066.6290 | 1066.647 i | 2.535 | 0.149 | 1066.632 w | 0.366 | 0.111 | 1066.642 w | 0.151 | 0.127 |
| N I | 1067.3860 | 1067.344 w | 0.380 | 0.181 | | | | | | |
| N I | 1067.6160 | 1067.606 w | 0.521 | 0.166 | 1067.823 w | 0.055 | 0.101 | 1067.800 w | 0.025† | 0.104 |
| Fe III | 1068.1899 | 1068.203 w | 0.179 | 0.120 | 1068.279 w | 0.055 | 0.089 | 1068.164 w | 0.034 | 0.088 |
| Fe III (*)-Al V | 1068.2990 | | | | | | | 1068.338 b | 0.033† | 0.093 |
| N I | 1068.477 | 1068.436 w | 0.825 | 0.189 | 1068.410 w | 0.053 | 0.095 | | | |
| N I | 1068.6810 | 1068.665 w | 0.418 | 0.168 | | | | 1068.678 w | 0.023† | 0.081 |
| N I | 1069.1100 | 1069.127 w | 0.529 | 0.247 | 1069.242 w | 0.027† | 0.092 | | | |
| N I (*) | 1071.4410 | 1071.484 w | 0.425 | 0.212 | | | | | | |
| Fe III | 1071.7460 | 1071.663 w | 0.267 | 0.145 | 1071.702 w | 0.069 | 0.113 | 1071.696 w | 0.046 | 0.109 |
| S IV | 1072.9900 | 1072.982 i | 7.559 | 0.214 | 1072.952 i | 0.804 | 0.139 | 1072.951 i | 0.751 | 0.128 |
| S IV | 1073.5200 | 1073.500 w | 0.641 | 0.238 | 1073.563 w | 0.106 | 0.119 | 1073.544 w | 0.088 | 0.109 |
| He I/2 | 537.0296 | 1074.028 w | 18.337 | 0.095 | 1074.059 w | 7.335 | 0.103 | 1074.013 i | 8.476 | 0.089 |
| Fe III | 1075.0240 | 1075.032 w | 0.222 | 0.126 | | | | | | |
| S III | 1077.1300 | 1077.169 i | 2.462 | 0.197 | 1077.132 w | 0.389 | 0.138 | 1077.115 i | 0.332 | 0.151 |
| Fe III (*) | 1083.1760 | | | | | | | 1083.170 w | 0.054 | 0.089 |
| N II | 1083.9900 | 1084.000 i | 10.845 | 0.171 | 1084.004 i | 2.640 | 0.138 | 1084.006 i | 2.971 | 0.139 |
| N II (2) | 1084.5800 | 1084.585 i | 23.138 | 0.182 | 1084.590 i | 6.266 | 0.144 | 1084.584 i | 6.383 | 0.138 |
| He II (2) | 1084.9750 | 1084.949 i | 42.450 | 0.215 | 1084.948 i | 11.269 | 0.191 | 1084.953 i | 14.606 | 0.189 |
| N II | 1085.5460 | 1085.542 i | 7.621 | 0.131 | 1085.559 i | 2.609 | 0.113 | 1085.563 i | 2.938 | 0.115 |
| N II | 1085.7010 | 1085.725 i | 43.551 | 0.187 | 1085.726 i | 11.378 | 0.132 | 1085.726 i | 11.724 | 0.125 |
| C II | 1092.7260 | 1092.721 i | 1.466 | 0.145 | 1092.717 w | 0.086 | 0.134 | 1092.758 w | 0.105 | 0.113 |
| Si III | 1093.1050 | 1093.094 w | 0.449 | 0.136 | | | | | | |
| Al V | 1093.2200 | 1093.259 w | 0.728 | 0.260 | 1093.293 w | 0.040 | 0.089 | | | |
| | | 1094.238 | 0.489 | 0.260 | | | | 1094.280 | 0.068 | 0.089 |
| | | 1094.421 | 0.487 | 0.260 | | | | | | |
| | | 1095.207 | 0.199 | 0.088 | | | | | | |
| S II | 1096.5699 | 1096.691 w | 0.952 | 0.260 | | | | 1096.631 | 0.085 | 0.090 |
| Fe III | 1096.6060 | 1096.776 w | 0.186 | 0.089 | 1096.633 | 0.064 | 0.090 | 1096.623 w | 0.047 | 0.089 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| N I ** | 1097.2371 | 1097.255 b | 0.826 | 0.122 | | | | 1097.238 | 0.065 | 0.127 |
| N I (*)- S I | 1097.4919 | 1097.472 b | 0.589 | 0.246 | 1097.586 b | 0.047 | 0.089 | 1097.378 b | 0.028 | 0.089 |
| N I ** | 1098.0970 | 1098.127 b | 1.891 | 0.125 | 1098.074 b | 0.084 | 0.164 | 1097.999 b | 0.070 | 0.070 |
| Fe III ** | 1098.2469 | 1098.301 b | 1.697 | 0.152 | 1098.290 b | 0.127 | 0.094 | 1098.265 b | 0.162 | 0.104 |
| N I | 1099.0420 | 1099.086 w | 0.801 | 0.260 | 1098.980 w | 0.056† | 0.208 | 1098.981 w | 0.094 | 0.158 |
| S IV (*) | 1099.53 | 1099.496 w | 0.313 | 0.188 | 1099.58 w | 0.089 | 0.193 | | | |
| Al XI/2 | 550.0300 | 1099.950 w | 3.668 | 0.066 | 1100.143 w | 5.171 | 0.125 | 1100.036 w | 2.777 | 0.077 |
| | | 1101.389 | 0.564 | 0.226 | | | | | | |
| | | 1101.769 | 0.531 | 0.235 | | | | 1101.980 | 0.036 | 0.287 |
| S II | 1102.3199 | 1102.437 w | 0.756 | 0.194 | 1102.311 w | 0.066 | 0.089 | 1102.373 w | 0.112 | 0.204 |
| C I ** | 1103.3000 | 1103.401 b | 0.498 | 0.093 | | | | 1103.439 b | 0.022† | 0.088 |
| C I ** | 1103.6000 | 1103.593 b | 0.534 | 0.098 | | | | | | |
| C I | 1103.8650 | 1103.871 w | 0.691 | 0.115 | 1103.854 w | 0.339 | 0.144 | 1103.840 w | 0.028? † | 0.072 |
| C I | 1104.1650 | 1104.186 w | 0.955 | 0.171 | 1104.195 w | 0.483 | 0.238 | 1104.197 w | 0.034? † | 0.092 |
| C I | 1104.6270 | 1104.588 w | 0.829 | 0.125 | 1104.584 w | 0.289 | 0.182 | 1104.565 | 0.114 | 0.137 |
| C I | 1104.9420 | 1104.968 w | 0.584 | 0.088 | 1104.950 w | 0.251 | 0.097 | 1104.970 | 0.048 | 0.097 |
| C I | 1105.142 | 1105.157 w | 0.300 | 0.093 | 1105.169 w | 0.127 | 0.066 | | | |
| C I | 1105.4720 | 1105.446 i | 1.168 | 0.120 | 1105.449 w | 0.347 | 0.121 | 1105.434 w | 0.033 | 0.036 |
| C I | 1105.7321 | 1105.735 w | 0.407 | 0.087 | 1105.728 w | 0.165 | 0.062 | 1105.698 | 0.052 | 0.071 |
| C I | 1106.0630 | 1106.071 w | 0.899 | 0.122 | 1106.061 w | 0.242 | 0.118 | | | |
| C I | 1106.2629 | 1106.285 w | 0.547 | 0.108 | 1106.310 w | 0.286 | 0.123 | 1106.298 w | 0.020† | 0.051 |
| C I | 1106.45 | 1106.504 i | 1.302 | 0.154 | 1106.497 w | 0.339 | 0.120 | 1106.627 | 0.060 | 0.101 |
| C I ** | 1106.7810 | 1106.809 b | 1.547 | 0.119 | 1106.803 b | 0.533 | 0.131 | 1106.790 | 0.064 | 0.136 |
| C I | 1107.3470 | 1107.300 i | 1.809 | 0.210 | 1107.327 w | 0.612 | 0.214 | 1107.273 | 0.103 | 0.279 |
| C I | 1107.6700 | 1107.671 i | 2.102 | 0.160 | 1107.687 i | 0.672 | 0.116 | 1107.686 w | 0.097 | 0.192 |
| C I | 1107.9080 | 1107.902 w | 0.608 | 0.109 | 1107.918 | 0.054 | 0.069 | | | |
| C I - O IV (?) | 1108.1090 | 1108.155 b | 2.401 | 0.185 | 1108.104 b | 0.349 | 0.151 | 1108.140 b | 0.126 | 0.171 |
| C I | 1108.4410 | 1108.430 i | 4.476 | 0.215 | 1108.358 w | 0.200 | 0.135 | 1108.366 w | 0.249 | 0.162 |
| C I | 1108.8040 | 1108.799 i | 2.827 | 0.147 | 1108.756 | 0.123 | 0.096 | 1108.783 w | 0.077 | 0.095 |
| C I - O IV/2 | 1109.0310 | 1109.041 b | 2.502 | 0.169 | 1108.987 b | 0.794 | 0.177 | 1109.000 b | 0.467 | 0.194 |
| C I | 1109.2330 | 1109.234 i | 1.662 | 0.140 | 1109.241 w | 0.032 | 0.072 | | | |
| C I | 1109.6050 | 1109.599 i | 1.379 | 0.133 | | | | | | |
| Si III ** | 1109.9650 | 1109.975 b | 9.394 | 0.310 | 1109.943 b | 0.562 | 0.162 | 1109.937 b | 0.551 | 0.132 |
| C I | 1110.2111 | 1110.206 i | 2.150 | 0.129 | 1110.179 w | 0.177 | 0.104 | | | |
| * | | 1110.423 b | 1.646 | 0.168 | 1110.453 b | 0.071 | 0.072 | 1110.141 b | 0.174 | 0.117 |
| O IV/2 ** | 555.2610 | 1110.640 b | 24.747 | 0.073 | 1110.578 b | 2.201 | 0.088 | 1110.671 b | 1.489 | 0.079 |
| C I | 1111.0100 | 1111.013 i | 1.441 | 0.160 | | | | 1111.244 w | 0.027† | 0.138 |
| C I | 1111.4210 | 1111.412 w | 0.782 | 0.127 | | | | | | |
| C I | 1111.6240 | 1111.631 i | 2.398 | 0.166 | | | | | | |
| C I | 1112.0031 | 1111.992 i | 5.795 | 0.248 | 1112.003 w | 0.149 | 0.139 | 1111.982 w | 0.218 | 0.137 |
| C I | 1112.2690 | 1112.235 i | 1.269 | 0.122 | | | | | | |
| C I | 1112.4720 | 1112.461 i | 2.182 | 0.157 | | | | 1112.432 w | 0.027† | 0.069 |
| C I | 1112.8060 | 1112.831 i | 1.557 | 0.177 | 1112.850 w | 0.021 | 0.049 | 1112.753 w | 0.013† | 0.074 |
| Si III ** | 1113.2280 | 1113.256 b | 13.288 | 0.207 | 1113.224 b | 1.526 | 0.149 | 1113.143 b | 0.672 | 0.107 |
| C I (*) | 1113.7930 | 1113.739 i | 1.346 | 0.170 | | | | 1113.580 w | 0.027† | 0.098 |
| C I | 1113.9960 | 1113.990 i | 3.313 | 0.206 | | | | 1113.954 w | 0.024† | 0.084 |
| C I | 1114.3800 | 1114.383 i | 7.575 | 0.258 | 1114.410 w | 0.240 | 0.197 | 1114.287 w | 0.191 | 0.168 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| C I | 1114.6281 | 1114.634 i | 1.473 | 0.124 | | | | 1114.545 w | 0.023† | 0.067 |
| C I | 1114.8300 | 1114.862 i | 2.685 | 0.168 | 1114.828 w | 0.065 | 0.092 | 1114.858 w | 0.043† | 0.106 |
| C I | 1115.2250 | 1115.241 i | 2.704 | 0.257 | 1115.308 w | 0.061 | 0.160 | 1115.198 w | 0.048 | 0.067 |
| Ca X/2 | 557.765 | | | | 1115.500 w | 5.400 | 0.120 | 1115.539 w | 3.443 | 0.103 |
| C I | 1117.000 | 1116.973 w | 0.676 | 0.094 | | | | | | |
| C I ** | 1117.2050 | 1117.203 b | 4.393 | 0.263 | 1117.197 b | 0.244 | 0.208 | | | |
| C I ** | 1117.5811 | 1117.649 b | 8.246 | 0.264 | 1117.671 b | 0.313 | 0.242 | | | |
| C I ** | 1117.8660 | 1117.900 b | 1.901 | 0.134 | 1117.942 b | 0.079 | 0.140 | 1117.722 b | 0.055 | 0.063 |
| C I ** | 1118.1801 | 1118.123 b | 3.566 | 0.190 | 1118.090 b | 0.104 | 0.166 | 1117.900 b | 0.541 | 0.505 |
| C I | 1118.4910 | 1118.471 i | 2.341 | 0.164 | 1118.507 w | 0.035 | 0.089 | 1118.469 w | 0.048 | 0.073 |
| Al IV ** | 1118.8240 | 1118.886 b | 1.409 | 0.291 | | | | 1118.863 b | 0.234 | 0.128 |
| C I | 1121.4520 | 1121.490 i | 1.404 | 0.149 | 1121.506 w | 0.035 | 0.086 | | | |
| C I | 1121.6580 | 1121.685 i | 2.852 | 0.171 | 1121.669 w | 0.054 | 0.098 | | | |
| C I | 1122.098 | 1122.040 i | 4.772 | 0.297 | 1122.023 w | 0.239 | 0.168 | 1122.092 i | 0.318 | 0.252 |
| C I ** | 1122.3340 | 1122.335 b | 5.654 | 0.202 | 1122.352 b | 0.669 | 0.243 | 1122.352 b | 0.624 | 0.250 |
| Fe III-C I-Si IV | 1122.526 | 1122.537 b | 13.307 | 0.162 | 1122.520 b | 1.904 | 0.137 | 1122.521 b | 2.137 | 0.132 |
| C I ** | 1122.7250 | 1122.702 b | 8.131 | 0.260 | 1122.726 b | 0.318 | 0.209 | 1122.724 b | 0.390 | 0.240 |
| C I | 1122.9850 | 1123.114 i | 2.902 | 0.158 | 1123.120 w | 0.112 | 0.132 | 1123.107 w | 0.084 | 0.096 |
| Ne VII/2 | 561.7280 | 1123.469 w | 6.282 | 0.073 | 1123.469 w | 2.143 | 0.061 | | | |
| Fe III | 1124.8831 | 1124.909 i | 6.721 | 0.212 | 1124.875 i | 0.748 | 0.168 | 1124.880 i | 0.810 | 0.145 |
| Ne VI/2 ** | 562.798 | | | | 1125.599 b | 5.314 | 0.268 | 1125.419 b | 1.394 | 0.103 |
| Ne VII/2 ** | 562.9920 | 1125.698 b | 4.248 | 0.105 | 1125.699 b | 1.646 | 0.060 | 1125.616 b | 2.278 | 0.0606 |
| S III ** | 1126.5500 | 1126.429 b | 0.306 | 0.095 | 1126.497 b | 0.157 | 0.234 | 1126.549 b | 0.158 | 0.200 |
| Fe III ** | 1126.7280 | 1126.582 b | 0.462 | 0.103 | 1126.722 b | 0.335 | 0.190 | 1126.719 b | 0.242 | 0.156 |
| S III ** | 1126.8500 | 1126.783 b | 1.619 | 0.186 | | | | 1126.765 b | 0.259 | 0.165 |
| Fe III ** | 1128.0500 | 1128.103 b | 4.992 | 0.174 | 1128.072 b | 0.663 | 0.175 | 1128.066 b | 0.637 | 0.142 |
| Si IV ** | 1128.3400 | 1128.379 b | 12.236 | 0.245 | 1128.367 b | 1.666 | 0.151 | 1128.371 b | 1.478 | 0.145 |
| Fe III | 1128.7230 | 1128.768 i | 11.003 | 0.268 | 1128.737 w | 0.565 | 0.169 | 1128.740 i | 0.620 | 0.170 |
| Ne VII/2 -Fe III | 564.5290 | 1129.169 b | 126.350 | 0.093 | 1129.153 b | 10.938 | 0.079 | 1129.180 b | 11.665 | 0.075 |
| C I | 1129.4050 | 1129.401 i | 2.583 | 0.146 | | | | | | |
| Al V | 1129.6200 | 1129.611 i | 3.231 | 0.171 | 1129.620 w | 0.104 | 0.206 | | | |
| C I | 1129.9240 | 1129.922 i | 3.165 | 0.154 | 1129.964 w | 0.098 | 0.152 | | | |
| C I | 1130.1710 | 1130.164 w | 0.717 | 0.126 | | | | | | |
| Fe III | 1130.4041 | 1130.442 i | 2.221 | 0.264 | 1130.405 i | 0.638 | 0.242 | 1130.395 i | 0.388 | 0.203 |
| Fe III-Si IV | 1131.1940 | 1131.201 b | 1.117 | 0.264 | 1131.190 b | 0.142 | 0.218 | 1131.193 b | 0.140 | 0.099 |
| S II | 1131.6500 | 1131.607 i | 1.032 | 0.125 | | | | | | |
| Fe III | 1131.9139 | 1131.918 w | 0.939 | 0.212 | 1131.890 w | 0.082 | 0.137 | 1131.929 w | 0.034† | 0.149 |
| Ca XIII | 1133.68 | 1133.671 | 6.174 | 0.141 | 1133.674 | 1.134 | 0.130 | 1133.674 | 1.444 | 0.129 |
| N I | 1134.1650 | 1134.175 i | 2.734 | 0.147 | 1134.150 w | 0.209 | 0.148 | 1134.169 w | 0.252 | 0.122 |
| N I | 1134.4147 | 1134.425 i | 4.754 | 0.150 | 1134.422 w | 0.489 | 0.127 | 1134.408 i | 0.401 | 0.122 |
| N I | 1134.9801 | 1134.989 i | 5.525 | 0.141 | 1134.984 i | 0.779 | 0.119 | 1134.984 i | 0.645 | 0.121 |
| Si VII ** | 1135.3530 | 1135.300 b | 1.332 | 0.286 | 1135.346 b | 0.353 | 0.169 | 1135.387 b | 0.146 | 0.165 |
| ** | | 1135.550 | 0.470 | 0.125 | 1135.410 | 0.427 | 0.323 | 1135.410 | 0.163 | 0.244 |
| Al XI/2 ** | 568.1500 | | | | 1136.422 b | 2.755 | 0.111 | 1136.445 b | 1.797 | 0.095 |
| Ne V ** | 1136.5100 | 1136.523 b | 0.260 | 0.178 | 1136.526 b | 0.270 | 0.151 | 1136.520 b | 0.233 | 0.174 |
| Ne V/2 ** | 568.42 | 1136.702 b | 3.712 | 0.086 | | | | | | |
| Si V -Si VII | 1137.2670 | 1137.234 b | 0.426 | 0.190 | 1137.154 b | 0.044 | 0.079 | | | |
| S IV (*) | 1138.1400 | 1138.055 w | 0.264 | 0.102 | | | | | | |
| C I | 1138.3831 | 1138.396 i | 1.137 | 0.119 | | | | | | |
| C I ** | 1138.5570 | 1138.614 i | 3.696 | 0.161 | 1138.629 w | 0.247 | 0.177 | 1138.616 w | 0.198 | 0.164 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| Fe II (?) ** | 1138.64 | 1138.795 w | 0.947 | 0.104 | | | | | | |
| C I - C II | 1138.9460 | 1138.942 b | 3.505 | 0.121 | 1138.932 b | 0.423 | 0.109 | 1138.938 b | 0.514 | 0.118 |
| | | 1139.094 | 3.110 | 0.146 | 1139.107 | 0.154 | 0.103 | 1139.090 | 0.122 | 0.114 |
| C II | 1139.3320 | 1139.288 i | 3.766 | 0.225 | | | | | | |
| C II | 1139.4730 | 1139.458 i | 3.766 | 0.225 | 1139.435 w | 0.171 | 0.229 | 1139.411 w | 0.127 | 0.239 |
| C I ** | 1139.8120 | 1139.807 b | 7.640 | 0.204 | 1139.803 b | 0.709 | 0.164 | 1139.782 b | 0.718 | 0.163 |
| C I (*) | 1140.005 | 1140.036 i | 3.525 | 0.230 | 1139.991 w | 0.085 | 0.097 | 1140.001 w | 0.095 | 0.138 |
| C I | 1140.3571 | 1140.347 i | 3.390 | 0.178 | 1140.354 w | 0.084 | 0.127 | 1140.321 w | 0.078 | 0.133 |
| C I | 1140.6400 | 1140.647 i | 3.586 | 0.173 | 1140.643 w | 0.116 | 0.110 | 1140.632 w | 0.118 | 0.091 |
| Fe III | 1141.2720 | 1141.345 w | 0.517 | 0.140 | | | | | | |
| C II | 1141.6250 | 1141.663 w | 0.759 | 0.166 | 1141.674 w | 0.052 | 0.107 | 1141.648 w | 0.074† | 0.252 |
| Si III - Si VII | 1142.2281 | 1142.323 b | 1.696 | 0.143 | | | | 1142.334 b | 0.193 | 0.126 |
| Si VII | 1142.441 | 1142.536 w | 0.562 | 0.177 | 1142.519 w | 0.337 | 0.252 | 1142.551 w | 0.215 | 0.230 |
| Fe III | 1142.9550 | 1142.957 w | 0.331 | 0.107 | 1143.039 w | 0.061 | 0.169 | | | |
| Fe II (*) | 1143.2260 | 1143.133 w | 0.579 | 0.238 | | | | | | |
| Fe III-Si VII | 1143.5450 | 1143.657 w | 1.119 | 0.195 | 1143.654 w | 0.240 | 0.230 | 1143.618 w | 0.206 | 0.357 |
| | | 1144.007 | 0.307 | 0.247 | | | | | | |
| Ne V/2 | 572.1060 | 1144.283 w | 2.446 | 0.063 | | | | 1144.249 w | 0.647 | 0.054 |
| Ne V/2 | 572.3360 | 1144.735 w | 1.597 | 0.096 | 1144.700 w | 1.47 | 0.087 | 1144.662 w | 1.224 | 0.085 |
| Fe II | 1144.9390 | 1144.941 w | 0.564 | 0.145 | 1144.957 w | 0.131 | 0.086 | 1144.958 w | 0.186 | 0.096 |
| Ne V | 1145.6000 | 1145.582 i | 1.311 | 0.198 | 1145.623 i | 0.628 | 0.165 | 1145.606 i | 0.719 | 0.158 |
| | | 1145.768 | 0.646 | 0.196 | | | | | | |
| Fe II | 1146.8300 | 1146.895 w | 0.707 | 0.234 | 1146.860 w | 0.147 | 0.186 | 1146.832 w | 0.139 | 0.206 |
| Fe II | 1147.4091 | 1147.411 w | 0.541 | 0.184 | 1147.404 w | 0.038 | 0.102 | 1147.413 w | 0.069 | 0.086 |
| Fe II -Ca X | 1148.0790 | 1148.044 b | 0.287 | 0.141 | 1148.015 b | 0.242 | 0.161 | 1148.024 b | 0.247 | 0.198 |
| Fe II | 1148.2770 | 1148.274 w | 0.310 | 0.116 | 1148.267 w | 0.067 | 0.086 | 1148.292 w | 0.114 | 0.124 |
| Ca III (*) ? | 1148.3990 | 1148.485 w | 0.158 | 0.113 | | | | | | |
| Si VI | 1148.6300 | 1148.870 w | 0.358 | 0.220 | 1148.678 w | 0.152 | 0.240 | 1148.587 w | 0.100† | 0.282 |
| Fe II | 1149.5890 | 1149.586 w | 0.241 | 0.121 | | | | 1149.551 w | 0.040 | 0.074 |
| S I (?) | 1149.9900 | 1149.968 w | 0.241 | 0.093 | 1149.923 w | 0.020 | 0.058 | | | |
| Fe II (*) ** | 1150.2900 | 1150.336 b | 0.394 | 0.220 | | | | | | |
| Fe II ** | 1150.4690 | 1150.492 b | 0.150 | 0.115 | | | | 1150.416 b | 0.054† | 0.169 |
| Fe II (*) ** | 1150.6851 | 1150.604 b | 0.255 | 0.107 | | | | 1150.659 b | 0.021 | 0.048 |
| O III | 1150.8820 | 1150.795 i | 1.126 | 0.140 | 1150.745 w | 0.030† | 0.120 | | | |
| Fe II | 1151.146 | 1151.152 w | 0.341 | 0.104 | | | | 1151.121 w | 0.078 | 0.138 |
| O I | 1152.1510 | 1152.151 i | 17.086 | 0.148 | 1152.147 i | 2.069 | 0.116 | 1152.142 i | 2.067 | 0.122 |
| Fe II-Si VI | 1152.8750 | 1152.852 b | 0.274 | 0.156 | | | | 1152.806 b | 0.126 | 0.264 |
| Fe II | 1153.2720 | 1153.329 w | 0.064 | 0.059 | | | | 1153.243 w | 0.123 | 0.264 |
| | | 1154.002 | 0.098 | 0.064 | | | | | | |
| Fe II | 1154.3990 | 1154.390 w | 0.153 | 0.112 | | | | 1154.310 w | 0.178† | 0.874 |
| C I | 1155.8090 | 1155.829 i | 1.680 | 0.148 | | | | | | |
| C I | 1156.1990 | 1156.016 i | 4.158 | 0.136 | 1156.019 w | 0.115 | 0.098 | 1156.035 w | 0.285 | 0.173 |
| S I | 1156.2600 | 1156.273 i | 6.010 | 0.205 | 1156.217 w | 0.087 | 0.162 | 1156.370 w | 0.159 | 0.234 |
| C I | 1156.5601 | 1156.542 i | 2.423 | 0.170 | 1156.510 w | 0.104 | 0.081 | 1156.550 w | 0.143 | 0.092 |
| C I | 1157.4050 | 1157.376 i | 2.356 | 0.195 | 1157.409 w | 0.051 | 0.105 | 1157.365 w | 0.057 | 0.084 |
| C I | 1157.7700 | 1157.788 i | 2.094 | 0.172 | 1157.793 w | 0.086 | 0.088 | 1157.782 w | 0.144 | 0.160 |
| C I | 1158.0190 | 1158.031 i | 7.051 | 0.271 | 1158.031 i | 0.711 | 0.208 | 1158.022 i | 0.946 | 0.196 |
| C I ** | 1158.397 | 1158.415 b | 3.409 | 0.253 | | | | | | |
| C I | 1158.7321 | 1158.709 i | 2.497 | 0.156 | 1158.700 w | 0.104 | 0.117 | 1158.708 w | 0.149 | 0.160 |
| C I | 1158.9670 | 1158.933 i | 2.723 | 0.152 | 1158.939 w | 0.085 | 0.071 | 1158.950 w | 0.160 | 0.109 |
| C I | 1159.1260 | 1159.091 w | 0.841 | 0.173 | | | | | | |
| Ni II | 1159.5100 | 1159.504 w | 0.165 | 0.094 | | | | 1159.370 w | 0.038† | 0.112 |
| | | 1160.521 | 0.311 | 0.107 | | | | | | |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| S I | 1160.7800 | 1160.782 w | 0.611 | 0.161 | 1160.870 w | 0.022† | 0.080 | | | |
| S I | 1161.3500 | 1161.350 i | 3.513 | 0.136 | 1161.345 w | 0.062 | 0.110 | | | |
| S I ** | 1161.5699 | 1161.583 b | 2.921 | 0.163 | | | | 1161.549 b | 0.061 | 0.074 |
| S I ** | 1161.7200 | 1161.750 b | 3.018 | 0.129 | 1161.810 b | 0.632 | 0.309 | 1161.721 b | 0.177 | 0.140 |
| S I | 1161.9700 | 1161.957 i | 2.040 | 0.161 | | | | 1161.882 w | 0.215 | 0.114 |
| | | 1162.680 | 0.507 | 0.247 | | | | | | |
| N I | 1163.8835 | 1163.838 i | 1.106 | 0.175 | | | | 1163.875 w | 0.031 | 0.061 |
| N I | 1164.0016 | 1164.004 i | 2.659 | 0.124 | 1163.937 w | 0.050 | 0.073 | 1164.021 w | 0.024 | 0.064 |
| ** | | 1166.431 | 4.462 | 0.500 | | | | | | |
| ** | | 1167.083 | 11.324 | 0.540 | | | | | | |
| N I | 1167.4484 | 1167.451 i | 2.691 | 0.183 | | | | 1167.428 w | 0.172 | 0.234 |
| Si VII | 1167.775 | | | | 1167.763 w | 0.178 | 0.325 | 1167.695 w | 0.114 | 0.142 |
| S I | 1168.0400 | 1168.041 i | 0.929 | 0.144 | | | | | | |
| N I ** (2) | 1168.3344 | 1168.307 b | 1.565 | 0.152 | 1168.416 b | 0.413 | 0.171 | 1168.430 b | 0.370 | 0.125 |
| He I/2 | 584.334 | 1168.660 i | 505.384 | 0.128 | 1168.665 i | 204.419 | 0.0930 | 1168.670 i | 152.292 | 0.096 |
| ** | | 1170.219 b | 5.841 | 0.305 | 1170.268 b | 0.152 | 0.199 | 1170.396 b | 0.077 | 0.111 |
| ** | | | | | | | | 1171.431 | 0.213 | 0.263 |
| | | 1171.902 | 4.718 | 0.205 | | | | | | |
| | | 1172.689 | 5.774 | 0.463 | | | | 1172.544 | 0.162 | 0.270 |
| C III | 1174.9330 | 1174.944 i | 42.764 | 0.223 | 1174.922 i | 5.114 | 0.145 | 1174.927 i | 5.844 | 0.139 |
| C III | 1175.2629 | 1175.314 i | 61.921 | 0.359 | 1175.251 i | 4.205 | 0.158 | 1175.255 i | 5.179 | 0.153 |
| C III | 1175.7111 | 1175.714 i | 157.104 | 0.245 | 1175.681 i | 16.803 | 0.174 | 1175.684 i | 21.416 | 0.170 |
| C III | 1175.9871 | 1176.005 i | 44.922 | 0.226 | 1175.969 i | 3.576 | 0.159 | 1175.970 i | 4.213 | 0.147 |
| C III | 1176.3700 | 1176.389 i | 52.935 | 0.282 | 1176.357 i | 4.698 | 0.162 | 1176.360 i | 6.234 | 0.154 |
| Ni II (*) ** | 1177.109 | 1177.070 b | 0.973 | 0.211 | | | | 1177.096 b | 0.120 | 0.150 |
| N I | 1177.6948 | 1177.674 i | 2.200 | 0.262 | | | | 1177.620 w | 0.061 | 0.067 |
| Si III ** | 1178.004 | 1178.035 b | 1.898 | 0.207 | | | | 1177.910 b | 0.175 | 0.383 |
| ** | | 1178.255 | 1.405 | 0.247 | | | | | | |
| Ni II | 1178.5710 | 1178.598 i | 1.462 | 0.305 | | | | | | |
| S I | 1181.5900 | 1181.633 i | 1.198 | 0.134 | | | | | | |
| | | | | | | | | 1181.938 | 0.055 | 0.079 |
| Si VIII | 1182.4550 | | | | 1182.505 w | 0.131 | 0.093 | | | |
| He I/2 (*) | 591.413 | | | | 1182.771 | 0.0596 | 0.601 | 1182.845 w | 1.079 | 0.081 |
| Fe II | 1183.4380 | 1183.478 w | 0.600 | 0.122 | 1183.600 w | 0.065 | 0.110 | 1183.426 w | 0.087 | 0.105 |
| Fe II | 1183.8290 | 1183.847 w | 0.711 | 0.155 | 1183.847 w | 0.065 | 0.116 | 1183.850 w | 0.066 | 0.067 |
| Si VIII | 1183.9950 | | | | 1184.040 w | 0.158 | 0.175 | 1184.063 w | 0.147 | 0.150 |
| N III | 1184.5140 | 1184.596 w | 0.194 | 0.117 | 1184.290 w | 0.097 | 0.175 | | | |
| | | | | | 1185.340 | 1.199 | 0.084 | | | |
| Fe II | 1185.7120 | 1185.735 w | 0.506 | 0.142 | | | | | | |
| Fe II | 1187.4170 | 1187.442 w | 0.156 | 0.091 | | | | 1187.452 w | 0.105 | 0.124 |
| C I | 1188.8330 | 1188.852 i | 1.487 | 0.172 | 1188.843 w | 0.141 | 0.158 | | | |
| C I | 1188.9919 | 1189.036 i | 2.063 | 0.146 | 1189.003 w | 0.133 | 0.126 | 1189.038 w | 0.226 | 0.175 |
| C I | 1189.2490 | 1189.255 i | 1.364 | 0.133 | 1189.264 w | 0.105 | 0.099 | 1189.340 w | 0.183 | 0.288 |
| C I | 1189.4470 | 1189.452 w | 0.889 | 0.136 | 1189.466 w | 0.376 | 0.152 | 1189.486 i | 0.347 | 0.172 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| C I | 1189.6310 | 1189.645 i | 1.962 | 0.173 | 1189.643 w | 0.460 | 0.155 | 1189.654 i | 0.296 | 0.143 |
| Mg VII | 1189.8400 | 1189.781 w | 0.449 | 0.138 | 1189.827 w | 0.352 | 0.168 | | | |
| Mg VI ** | 1190.0699 | 1190.069 b | 0.606 | 0.130 | 1190.057 b | 0.779 | 0.216 | 1190.062 b | 0.336 | 0.112 |
| Si III ** | 1190.1700 | 1190.189 b | 2.120 | 0.174 | 1190.166 b | 0.446 | 0.158 | 1190.220 b | 0.335 | 0.137 |
| Si II | 1190.4156 | 1190.432 i | 14.159 | 0.183 | 1190.434 i | 2.599 | 0.118 | 1190.434 i | 2.507 | 0.130 |
| Mg VI | 1191.6400 | 1191.557 w | 0.321 | 0.175 | 1191.626 w | 0.212 | 0.196 | 1191.664 w | 0.108 | 0.105 |
| C I | 1191.8380 | 1191.862 w | 0.836 | 0.128 | 1191.825 w | 0.078 | 0.066 | | | |
| C I (2) | 1193.0090 | 1193.044 i | 3.841 | 0.182 | 1193.033 w | 0.526 | 0.141 | 1193.049 i | 0.591 | 0.102 |
| Si II | 1193.2910 | 1193.307 i | 10.708 | 0.211 | 1193.290 i | 2.589 | 0.154 | 1193.299 i | 2.624 | 0.162 |
| C I | 1193.6790 | 1193.654 i | 2.022 | 0.187 | 1193.672 w | 0.101 | 0.097 | 1193.699 w | 0.148 | 0.088 |
| S III -Ca VIII/2 | 1194.0490 | 1194.068 b | 6.938 | 0.250 | 1194.052 b | 0.394 | 0.104 | 1194.072 b | 0.470 | 0.135 |
| S III -Si II | 1194.4430 | 1194.493 b | 22.991 | 0.257 | 1194.504 b | 3.517 | 0.141 | 1194.516 b | 4.035 | 0.152 |
| S X | 1196.2170 | | | | 1196.246 i | 1.365 | 0.252 | 1196.231 i | 1.035 | 0.228 |
| Si II | 1197.3950 | 1197.405 i | 8.586 | 0.202 | 1197.399 i | 1.446 | 0.116 | 1197.407 i | 1.355 | 0.121 |
| C I (*) | 1197.8770 | 1197.809 w | 0.877 | 0.187 | | | | | | |
| S V - O III/2 | 1199.180 | 1199.197 b | 6.499 | 0.184 | 1199.197 b | 0.867 | 0.149 | 1199.194 b | 1.466 | 0.156 |
| N I | 1199.5520 | 1199.567 i | 20.567 | 0.205 | 1199.562 i | 2.523 | 0.125 | 1199.570 i | 2.493 | 0.127 |
| N I | 1200.2260 | 1200.230 i | 13.398 | 0.156 | 1200.224 i | 1.774 | 0.119 | 1200.235 i | 1.772 | 0.115 |
| N I | 1200.7120 | 1200.710 i | 10.549 | 0.165 | 1200.708 i | 0.870 | 0.104 | 1200.703 i | 1.250 | 0.150 |
| S III | 1200.9611 | 1200.962 i | 7.984 | 0.184 | 1200.890 i | 0.758 | 0.337 | 1200.962 i | 0.819 | 0.181 |
| | | 1202.000 | 2.178 | 0.135 | | | | | | |
| | | 1202.671 | 2.985 | 0.164 | | | | | | |
| | | 1203.445 | 2.894 | 0.180 | | | | | | |
| S I ** | 1204.35 | 1204.359 b | 6.567 | 0.175 | 1204.299 b | 0.390 | 0.137 | 1204.318 b | 0.431 | 0.149 |
| Si III (2) | 1206.5020 | 1206.526 i | 549.051 | 0.217 | 1206.503 i | 60.889 | 0.144 | 1206.508 i | 80.476 | 0.122 |
| O V | 1218.3929 | 1218.386 i | 62.763 | 0.223 | 1218.302 i | 16.076 | 0.154 | 1218.290 i | 22.368 | 0.170 |
| Mg X/2 | 609.7940 | 1219.630 i | 102.233 | 0.181 | 1219.553 i | 65.315 | 0.150 | 1219.568 i | 19.236 | 0.145 |
| S I (2) | 1224.4790 | 1224.500 i | 4.513 | 0.220 | | | | | | |
| | | 1228.075 i | 3.090 | 0.152 | | | | | | |
| N I (2)(*)** | 1228.7911 | 1228.822 w | 1.054 | 0.110 | | | | | | |
| N I (*)** | 1228.9070 | 1228.958 w | 0.340 | 0.127 | | | | | | |
| S I | 1229.6080 | 1229.638 w | 1.148 | 0.175 | | | | 1229.960 w | 0.302 | 0.193 |
| S I | 1230.4730 | 1230.435 w | 0.592 | 0.189 | | | | | | |
| Si VIII | 1232.54 | 1232.651 w | 0.494 | 0.134 | | | | 1232.570 i | 0.652 | 0.287 |
| S I | 1235.6240 | 1235.629 w | 0.541 | 0.096 | | | | | | |
| Al IV (?) | 1237.1860 | 1237.066 w | 0.595 | 0.095 | | | | | | |
| N V | 1238.8210 | 1238.819 i | 57.243 | 0.220 | 1238.808 i | 36.652 | 0.195 | 1238.817 i | 42.440 | 0.175 |
| | | | | | | | | 1241.061 | 0.393 | 0.175 |
| Fe XII | 1242.0300 | 1241.962 i | 4.581 | 0.219 | 1241.997 i | 12.745 | 0.231 | 1242.026 i | 9.517 | 0.239 |
| C I | 1242.278 | | | | 1242.266 i | 0.884 | 0.217 | | | |
| N V | 1242.8060 | 1242.800 i | 28.965 | 0.219 | 1242.814 i | 17.113 | 0.198 | 1242.854 i | 19.983 | 0.175 |
| N I (2) | 1243.1786 | 1243.152 i | 4.022 | 0.159 | 1243.104 i | 2.680 | 0.414 | 1243.115 i | 0.877 | 0.173 |

**Table 1.** continued.

| | | Quiet Sun | | | Prominence A_1 | | | Prominence A_2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ion | $\lambda_t$ | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* | $\lambda_{obs}$ | *I* | *FWHM* |
| N I | 1243.3058 | 1243.296 w | 0.958 | 0.080 | 1243.160 w | 0.435 | 0.173 | | | |
| C I | 1243.518 | 1243.479 i | 1.804 | 0.142 | 1243.507 w | 0.245 | 0.275 | | | |
| C I | 1243.7841 | 1243.772 w | 0.586 | 0.113 | | | | | | |
| C I | 1243.9980 | 1244.017 i | 2.572 | 0.181 | | | | | | |
| C I | 1244.5350 | 1244.516 i | 2.446 | 0.116 | | | | | | |
| C I | 1244.9960 | 1244.979 w | 1.297 | 0.128 | 1244.955 w | 0.058 | 0.071 | | | |
| C I | 1245.1830 | 1245.162 i | 2.027 | 0.124 | | | | | | |
| C I | 1245.5380 | 1245.507 w | 0.819 | 0.104 | | | | | | |
| C I | 1245.9430 | 1245.933 i | 2.639 | 0.127 | | | | | | |
| C I | 1246.1801 | 1246.170 w | 0.889 | 0.104 | | | | | | |
| C I | 1246.8621 | 1246.871 i | 4.276 | 0.140 | | | | | | |
| S I | 1247.1600 | 1247.158 i | 2.155 | 0.113 | | | | | | |
| C III | 1247.3831 | 1247.379 i | 1.943 | 0.236 | 1247.358 w | 0.362 | 0.144 | 1247.380 i | 0.512 | 0.153 |
| C I | 1247.8669 | 1247.859 i | 2.878 | 0.128 | | | | | | |
| C I | 1248.0090 | 1248.016 i | 4.379 | 0.149 | | | | | | |
| C I | 1249.0040 | 1248.993 i | 2.271 | 0.120 | | | | | | |
| C I | 1249.4050 | 1249.390 i | 4.620 | 0.134 | 1249.409 w | 0.416 | 0.214 | 1249.399 w | 0.313 | 0.139 |
| Mg X/2 | 624.9430 | 1249.933 i | 33.675 | 0.154 | 1249.916 i | 25.607 | 0.135 | 1249.915 i | 13.682 | 0.138 |
| C I | 1250.423 | 1250.428 i | 4.582 | 0.150 | | | | | | |
| S II | 1250.5 | 1250.590 i | 5.038 | 0.127 | 1250.557 w | 0.372 | 0.122 | | | |
| S I (*) | 1250.814 | 1250.781 w | 0.782 | 0.145 | | | | | | |
| Si II ** | 1251.164 | 1251.170 b | 6.005 | 0.141 | | | | | | |
| Si V (*) | 1251.39 | 1251.377 w | 0.251 | 0.087 | | | | | | |
| C I | 1252.208 | 1252.203 i | 3.165 | 0.131 | | | | | | |
| C I ** | 1253.4670 | 1253.447 b | 9.574 | 0.208 | 1253.433 b | 0.214 | 0.174 | | | |
| S II | 1253.7900 | 1253.808 i | 11.884 | 0.152 | 1253.815 i | 1.199 | 0.123 | 1253.818 i | 1.537 | 0.127 |
| C I | 1254.5129 | 1254.520 i | 3.717 | 0.133 | | | | | | |
| Si I | 1255.2760 | 1255.291 i | 6.001 | 0.193 | 1255.269 w | 0.057 | 0.057 | | | |
| Si I | 1256.0930 | 1256.090 w | 0.756 | 0.114 | | | | | | |
| C I ** | 1256.4980 | 1256.495 b | 18.555 | 0.192 | 1256.514 b | 0.218 | 0.140 | 1256.517 b | 0.474 | 0.154 |
| C I | 1257.5649 | 1257.569 i | 4.002 | 0.119 | | | | | | |
| Si I | 1258.7950 | 1258.805 i | 20.043 | 0.202 | 1258.817 w | 0.216 | 0.136 | 1258.800 w | 0.194 | 0.096 |
| S II ** | 1259.58 | 1259.534 b | 77.702 | 0.231 | 1259.505 b | 27.497 | 0.184 | 1259.510 b | 33.705 | 0.185 |

**Table 2.** Ion, theoretical position, transition, and temperature of maximum emission of the lines listed in Table 1. For the blended lines, we only report the information for the most intense line, which is listed first. The last column lists the reference used for the line identification. The reference sources are as follows: 1- Kelly (1987), 2- Young et al. (2003), 3-Curdt et al. (2004), 4-Feldman et al. (1997).

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| O II | 796.6610 | $2s^2\ 2p^3\ 2P_{3/2}$–$2s\ 2p^4\ 2D_{5/2}$ | 4.7 | 1 |
| C II | 799.6600 | $2s\ 2p^2\ {}^2D_{5/2}\ 2s\ 2p\ 3d\ {}^2F_{7/2}$ | 4.5 | 1 |
| C II | 799.9440 | $2s\ 2p^2\ {}^2D_{3/2}$–$2s\ 2p\ 3d\ {}^2F_{5/2}$ | 4.5 | 1 |
| C II | 806.384 | $2s\ 2p^2\ {}^2P_{3/2}$–$2s\ 2p\ 3s\ {}^4P_{5/2}$ | 4.5 | 1 |
| C II (2) | 806.86 | $2s\ 2p^2\ {}^4P_{3/2}$– $2s\ 2p\ 3s\ {}^4P_{3/2}$ | 4.5 | 1 |
| S IV - C II | 809.6680 | $3s^2\ 3p\ {}^2P_{1/2}$–$3s^3\ 3p^2\ {}^2S_{1/2}$ | 5.1 | 1 |
| Fe III | 813.3820 | $3d^6\ {}^5D_4$–$3d^5\ 4p\ {}^5D_4$ | 4.4 | 1 |
| Si IV | 815.0490 | $2p^6\ 3p\ {}^2P_{1/2}$–$2p^6\ 4s\ {}^2S_{1/2}$ | 4.9 | 1 |
| S IV | 815.9520 | $3s^2\ 3p\ {}^2P_{3/2}$–$3s\ 3p^2\ {}^2S_{1/2}$ | 5.0 | 1 |
| Si IV | 818.1290 | $3p\ {}^2P_{3/2}$–$4s\ {}^2S_{1/2}$ | 4.9 | 1 |
| Ca IX | 821.2690 | $3s\ 3p\ {}^1P_1$–$3p^2\ {}^1D_2$ | 5.8 | 1 |
| O II | 832.7620 | $2s^2\ 2p^3\ {}^4S_{3/2}$–$2s\ 2p^4\ {}^4P_{1/2}$ | 4.7 | 1 |
| O III | 832.9270 | $2s^2\ 2p^2\ {}^3P_0$–$2s\ 2p^3\ {}^3D_1$ | 4.9 | 1 |
| O II | 833.3320 | $2s^2\ 2p^3\ {}^4S_{3/2}$–$2s\ 2p^4\ {}^4P_{3/2}$ | 4.7 | 1 |
| O III (*) | 833.7100 | $2s^2\ 2p^2\ {}^3P_1$–$2s\ 2p^3\ {}^3D_1$ | 4.9 | 2 |
| O III | 833.7420 | $2s^2\ 2p^2\ {}^3P_1$–$2s\ 2p^3\ {}^3D_2$ | 4.9 | 1 |
| O II | 834.4620 | $2s^2\ 2p^3\ {}^4S_{3/2}$–$2s\ 2p^4\ {}^4P_{5/2}$ | 4.7 | 1 |
| O III | 835.0960 | $2s^2\ 2p^2\ {}^3P_2$–$2s\ 2p^3\ {}^3D_2$ | 4.9 | 1 |
| O III | 835.2920 | $2s^2\ 2p^2\ {}^3P_2$–$2s\ 2p^3\ {}^3D_3$ | 4.9 | 1 |
| Fe III (*) | 839.9810 | $3d^6\ {}^5D_1$–$3d^5\ 4p\ {}^3P_1$ | 4.4 | 1 |
| Fe III (*) | 840.5180 | $3d^6\ {}^3G_3$–$3d^5\ 4p\ {}^3G_3$ | 4.4 | 1 |
| Fe III (*) | 844.2840 | $3d^6\ {}^5D_4$–$3d^5\ 4p\ {}^5P_3$ | 4.4 | 1 |
| Fe III (*) | 845.4080 | $3d^6\ {}^5D_3$–$3d^5\ 4p\ {}^5P_2$ | 4.4 | 1 |
| S V | 849.2400 | $3s\ 3p\ {}^3P_1$–$3p^2\ {}^3P_2$ | 5.2 | 2 |
| Ar IV | 850.5980 | $3s^2\ 3p^3\ {}^4S_{3/2}$–$3s\ 3p^4\ {}^4P_{5/2}$ | 5.0 | 2 |
| Fe III (*) | 851.1500 | $3d^6\ {}^3G_5$–$3d^5\ 4p\ {}^3F_4$ | 4.4 | 1 |
| S V | 852.1780 | $3s\ 3p\ {}^3P_0$–$3p^2\ {}^3P_1$ | 5.2 | 2 |
| S IV (*) | 852.711 | $3s\ 3p^2\ {}^2D_{3/2}$–$3p^3\ {}^2P_{1/2}$ | 5.1 | 2 |
| Mg VII | 854.7240 | $2s^2\ 2p^2\ {}^3P_1$–$2s\ 2p^3\ {}^5S_2$ | 5.8 | 2 |
| S V (2) | 854.8700 | $3s\ 3p\ {}^3P_2$–$3p^2\ {}^3P_2$ | 5.2 | 2 |
| Fe III (*) | 855.4410 | $3d^6\ {}^3D_2$–$3d^5\ 4p\ {}^3D_2$ | 4.4 | 1 |
| Al III (?) (*) | 856.7470 | $3p\ {}^2P_{3/2}$–$5s\ {}^2S_{1/2}$ | 4.6 | 1 |
| Fe III (*) | 857.3920 | $3d^6\ {}^5D_3$–$3d^5\ 4p\ {}^3D_3$ | 4.4 | 1 |
| Fe III (*) | 857.6900 | $3d^6\ {}^3F_4$–$3d^5\ 4p\ {}^3G_5$ | 4.4 | 1 |
| C II | 858.0918 | $2s^2\ 2p\ {}^2P_{1/2}$–$2s^2\ 3s\ {}^2S_{1/2}$ | 4.5 | 1 |
| C II | 858.5590 | $2s^2\ 2p\ {}^2P_{3/2}$–$2s^2\ 3s\ {}^2S_{1/2}$ | 4.5 | 1 |
| Fe III (2) | 859.7210 | $3d^6\ {}^5D_4$–$3d^5\ 4p\ {}^5F_5$ | 4.4 | 1 |
| Fe III (2) | 861.8320 | $3d^6\ {}^5D_3$–$3d^5\ 4p\ {}^5F_4$ | 4.4 | 1 |
| Fe III | 864.0340 | $3d^6\ {}^5D_2$–$3d^5\ 4p\ {}^5F_3$ | 4.4 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| Mg VII | 868.1930 | $2s^2\ 2p^2\ ^3P_2$–$2s\ 2p^3\ ^5S_2$ | 5.8 | 2 |
| Na VII | 869.537 | $2s^2\ 2p\ ^2P_{1/2}$–$2s\ 2p^2\ ^4P_{1/2}$ | 5.7 | 3 |
| S IX | 871.7270 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^4\ ^1S_0$ | 6.0 | 2 |
| Ar VII | 877.9200 | $3s^2\ ^1S_0$–$3s\ 3p\ ^3P_1$ | 5.6 | 4 |
| C III - Fe III (*) | 884.5260 | $2p^2\ ^1D_2$–$2s\ 3p\ ^1P_1$ | 4.9 | 2 |
| Ne VII | 895.1800 | $2s^2\ ^1S_0$–$2s\ 2p\ ^3P_1$ | 5.7 | 1 |
| C II | 903.6235 | $2s^2\ 2p\ ^2P_{1/2}$–$2s\ 2p^2\ ^2P_{3/2}$ | 4.5 | 1 |
| C II | 903.9616 | $2s^2\ 2p\ ^2P_{1/2}$–$2s\ 2p^2\ ^2P_{1/2}$ | 4.5 | 1 |
| C II | 904.1416 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^2P_{3/2}$ | 4.5 | 1 |
| C II | 904.4801 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^2P_{1/2}$ | 4.5 | 1 |
| H I Ly 21 | 913.4802 | $1s\ ^2S_{1/2}$–$22p\ ^2P_{3/2}$ | 4.2 | |
| H I Ly 20 | 913.826 | $1s\ ^2S_{1/2}$–$21p\ ^2P_{3/2}$ | 4.2 | |
| H I Ly 19 | 914.0390 | $1s\ ^2S_{1/2}$–$20p\ ^2P_{3/2}$ | 4.2 | |
| H I Ly 18 | 914.2860 | $1s\ ^2S_{1/2}$–$19p\ ^2P_{3/2}$ | 4.2 | |
| H I Ly 17 | 914.5760 | $1s\ ^2S_{1/2}$–$18p\ ^2P_{3/2}$ | 4.2 | 1 |
| H I Ly 16 | 914.9190 | $1s\ ^2S_{1/2}$–$17p\ ^2P_{3/2}$ | 4.2 | 1 |
| H I Ly 15 | 915.3290 | $1s\ ^2S_{1/2}$–$16p\ ^2P_{3/2}$ | 4.2 | 1 |
| N II | 915.6120 | $2s^2\ 2p^2\ ^3P_0$–$2s\ 2p^3\ ^3P_1$ | 4.7 | 1 |
| H I Ly 14 | 915.8240 | $1s\ ^2S_{1/2}$–$15p\ ^2P_{3/2}$ | 4.2 | 1 |
| N II (2) | 916.0130 | $2s^2\ 2p^2\ ^3P_1$–$2s\ 2p^3\ ^3P_2$ | 4.7 | 2 |
| H I Ly 13 | 916.4290 | $1s\ ^2S_{1/2}$–$14p\ ^2P_{3/2}$ | 4.2 | 1 |
| N II (2) | 916.7010 | $2s^2\ 2p^2\ ^3P_2$–$2s\ 2p^3\ ^3P_2$ | 4.7 | 1 |
| H I Ly 12 | 917.1810 | $1s\ ^2S_{1/2}$–$13p\ ^2P_{3/2}$ | 4.2 | 1 |
| H I Ly 11 | 918.1290 | $1s\ ^2S_{1/2}$–$12p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I | 918.7260 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 12d\ ^3D_1$ | <4.0 | 1 |
| Si VII | 918.850 | $2p^3\ 3p\ ^3F_4$–$2p^3\ 3d\ ^3G_5$ | 5.7 | 3 |
| H I Ly 10 | 919.3500 | $1s\ ^2S_{1/2}$–$11p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I | 919.6580 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 10d\ ^3D_3$ | <4.0 | 1 |
| O I (2) | 919.9080 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 11s\ ^3S_1$ | <4.0 | 1 |
| H I Ly 9 | 920.9630 | $1s\ ^2S_{1/2}$–$10p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I (*) | 921.2470 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 11s\ ^3S_1$ | <4.0 | 1 |
| O I | 921.5750 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 10d\ ^3D_1$ | <4.0 | 1 |
| O I | 921.8600 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 9d\ ^3D_3$ | <4.0 | 1 |
| O I | 922.0727 | $2s^2\ 2p^4\ ^1D_2$–$2s^2\ 2p^3\ 3d\ ^1D_2$ | <4.0 | 1 |
| O I - N IV | 922.4600 | $2s^2\ 2p^4\ ^1D_2$–$2s^2\ 2p^3\ 3d\ ^1P_2$ | <4.0 | 1 |
| H I Ly 8 | 923.150 | $1s\ ^2S_{1/2}$–$9p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I - N IV | 923.7900 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 9d\ ^3D_1$ | <4.0 | 1 |
| S VII - S V | 924.06 | $2s^2\ 2p^5\ 3s\ ^3P_1$–$2s^2\ 2p^5\ 3p\ ^3D_2$ | 5.77 | 4 |
| N IV | 924.2830 | $2s\ 2p\ ^3P_2$–$2p^2\ ^3P_1$ | 5.1 | 1 |
| O I | 924.9520 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 8d\ ^3D_3$ | <4.0 | 1 |
| O I | 925.4420 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 9s\ ^3S_1$ | <4.0 | 1 |
| He II | 925.8000 | $2p\ ^2P_{3/2}$–$16d\ ^2D_{5/2}$ | 4.9 | 1 |
| H I Ly 7 | 926.2260 | $1s\ ^2S_{1/2}$–$8p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I (2) | 926.8090 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 9s\ ^3S_1$ | <4.0 | 1 |
| O I | 927.3940 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 9s\ ^3S_1$ | <4.0 | 1 |
| He II | 927.8600 | $2s^2\ ^2S$–$15p\ ^2P$ | 4.9 | 4 |
| O I | 929.5168 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 7d\ ^3D_3$ | <4.0 | 1 |
| Fe III | 930.0860 | $3d^6\ ^3G_3$–$3d^5\ 4p\ ^3H_4$ | 4.4 | 1 |
| O I - He II | 930.2566 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 8s\ ^3S_1$ | <4.0 | 1 |
| H I Ly 6 | 930.7480 | $1s\ ^2S_{1/2}$–$7p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I | 931.4820 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 7d\ ^3D_1$ | <4.0 | 1 |
| O I | 931.6282 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 8s\ ^3S_1$ | <4.0 | 1 |
| O I | 932.2249 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 8s\ ^3S_1$ | <4.0 | 1 |
| S VI | 933.3800 | $3s\ ^2S_{1/2}$–$3p\ ^2P_{3/2}$ | 5.3 | 1 |
| Fe III | 934.7030 | $3d^6\ ^3P_2$–$3d^5\ 4p\ ^3S_1$ | 4.4 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | log($T$)$_{max}$ | Ref. |
|---|---|---|---|---|
| O I | 935.1930 | $2s^2\ 2p^4\ ^1D_2$–$2s^2\ 2p^3\ 4s\ ^1D_2$ | <4.0 | 1 |
| Mg IV (*) | 936.2880 | $2s^2\ 2p^4\ 3p\ ^2P_{3/2}$–$2s^2\ 2p^4\ 4s\ ^2D_{5/2}$ | 5.3 | 1 |
| O I | 936.6295 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 6d\ ^3D_2$ | <4.0 | 1 |
| He II | | $2s^2\ ^2P_{3/2}$–$12d\ ^2D_{5/2}$ | 4.9 | 5 |
| S II (2) | 937.6900 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 4s\ ^2D_{5/2}$ | 4.4 | 2 |
| H I Ly 5 | 937.8030 | $1s\ ^2S_{1/2}$–$6p\ ^2P_{3/2}$ | 4.2 | 1 |
| O I | 938.6249 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 6d\ ^3D_1$ | <4.0 | 1 |
| O I | 939.2346 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 7s\ ^3S_1$ | <4.0 | 1 |
| O I | 939.8412 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 7s\ ^3S_1$ | <4.0 | 1 |
| He II | 942.5380 | $2p\ ^2P_{3/2}$–$11d\ ^2D_{/2}$ | 4.9 | 1 |
| Si VIII | 944.4670 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^3\ ^2P_{3/2}$ | 5.9 | 1 |
| S VI | 944.5240 | $3s\ ^2S_{1/2}$–$3p\ ^2P_{1/2}$ | 5.3 | 2 |
| C I | 945.1910 | $2s^2\ 2p^2\ ^3P_0$–$3s\ 2p^3\ ^3P_1$ | <4.0 | 1 |
| C I | 945.3380 | $2s^2\ 2p^2\ ^3P_0$–$3s\ 2p^3\ ^3S_1$ | <4.0 | 1 |
| C I | 945.5790 | $2s^2\ 2p^2\ ^3P_2$–$2s\ 2p^3\ ^3S_1$ | <4.0 | 1 |
| C II | 945.9770 | $2s\ 2p^2\ ^2S_{1/2}$–$2s\ 2p\ 3d\ ^2P_{1/2}$ | 4.5 | 1 |
| Fe III (*) | 946.056 | $3d^6\ ^3P_1$–$3d^5\ 4p\ ^1S_3$ | 4.4 | 1 |
| C II | 946.1980 | $2s\ 2p^2\ ^2S_{1/2}$–$2s\ 2p\ 3d\ ^2P_{3/2}$ | 4.5 | 1 |
| S X | 946.28 | $3s\ ^4P_{5/2}$–$3p\ ^4D_{7/2}$ | 6.13 | 3 |
| Fe III | 948.3220 | $3d^6\ ^3P_2$–$3d^5 4p\ ^3D_3$ | 4.4 | 1 |
| O I | 948.6855 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 5d\ ^3D_3$ | <4.0 | 1 |
| He II - Si VIII | 949.3540 | $2p\ ^2P_{3/2}$–$10d\ ^2D_{5/2}$ | 4.9 | 1 |
| H I Ly 4 | 949.7430 | $1s\ ^2S_{1/2}$–$5p\ ^2P_{3/2}$ | 4.2 | 2 |
| O I - Si IX | 950.1121 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 5d\ ^3D_2$ | <4.0 | 1 |
| Fe III | 950.3340 | $3d^6\ ^1I_6$–$3d^5 4p\ ^5G_6$ | 4.4 | 1 |
| O I - Fe III | 950.77327 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 5d\ ^3D_1$ | <4.0 | 1 |
| O I | 952.3178 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 6s\ ^3S_1$ | <4.0 | 1 |
| O I | 952.9413 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 6s\ ^3S_1$ | <4.0 | 1 |
| N I | 953.4150 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4P_{1/2}$ | <4.0 | 1 |
| N I | 953.6548 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4P_{3/2}$ | <4.0 | 1 |
| N I | 953.9698 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4P_{5/2}$ | <4.0 | 1 |
| N IV | 955.3350 | $2s\ 2p\ ^1P_1$–$2p^2\ ^1S_0$ | 5.1 | 1 |
| N I (*) | 955.4376 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4F_{3/2}$ | <4.0 | 1 |
| He II | 958.7240 | $2p\ ^2P_{3/2}$–$d\ ^2D_{5/2}$ | 4.9 | 1 |
| Fe III | 959.5520 | $3d^6\ ^3P_1$–$3d^5\ 4p\ ^3D_2$ | 4.4 | 1 |
| Fe III | 961.9010 | $3d^6\ ^1D_2$–$3d^5\ 4p\ ^1D_2$ | 4.4 | 1 |
| O III (*) | 962.4230 | $2s\ 2p^3\ ^1D_2$–$2s^2\ 2p\ 3p\ ^1P_1$ | 4.9 | 2 |
| Fe III - N I | 963.8800 | $3d^6\ ^3P_0$–$3d^5\ 4p\ ^3D_1$ | 4.4 | 1 |
| N I | 964.6258 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 4s\ ^4P_{3/2}$ | <4.0 | 1 |
| N I | 965.0415 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 4s\ ^4P_{1/2}$ | <4.0 | 1 |
| Fe III - Si V | 967.1970 | $3d^6\ ^3F_4$–$3d^5\ 4p\ ^3D_3$ | 4.4 | 1 |
| Fe III | 968.9550 | $3d^6\ ^3F_3$–$3d^5\ 4p\ ^3D_2$ | 4.4 | 1 |
| Fe III | 969.9540 | $3d^6\ ^3F_2$–$3d^5\ 4p\ ^3D_1$ | 4.4 | 1 |
| O I | 971.7390 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 4d\ ^3D_3$ | <4.0 | 1 |
| He II (2) | 972.1380 | $2p\ ^2P_{3/2}$–$8d\ ^2D_{5/2}$ | 4.9 | 1 |
| H I | 972.5380 | $1s\ ^2S_{1/2}$–$4p\ ^2P_{3/2}$ | 4.2 | 2 |
| O I | 973.2342 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 4d\ ^3D_2$ | <4.0 | 1 |
| Ne VII | 973.3300 | $2s\ 2p\ ^1P_1$–$2p^2\ ^1D_2$ | 5.7 | 2 |
| O I | 973.8852 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 4d\ ^3D_1$ | <4.0 | 1 |
| O I | 976.4480 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 5s\ ^3S_1$ | <4.0 | 1 |
| C III | 977.020 | $2s^2\ ^1S_0$–$2s\ 2p\ ^1P_1$ | 4.9 | 1 |
| O I | 977.9594 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 5s\ ^3S_1$ | <4.0 | 1 |
| O I | 978.6170 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 5s\ ^3S_1$ | <4.0 | 1 |
| Fe III | 979.0320 | $3d^6\ ^1F_3$–$3d^5 4p\ ^1F_3$ | 4.4 | 1 |
| O I (*) | 979.2720 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 5s\ ^5S_2$ | <4.0 | 1 |
| N III (2) | 979.8420 | $2s\ 2p^2\ ^2D_{3/2}$–$2p^3\ ^2D_{3/2}$ | 5.0 | 1 |
| Fe III | 981.3730 | $3d^5\ 4s\ ^5P_2$–$3d^5 5p\ ^5P_2$ | 4.4 | 1 |
| Si VIII | 982.1750 | $2s^2\ 2p^2\ 3p\ ^4D_{1/2}$–$2s^2\ 2p^2\ 3d\ ^4F_{3/2}$ | 5.9 | 2 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | log($T$)$_{max}$ | Ref. |
|---|---|---|---|---|
| Si VIII | 983.5760 | $2s^2\ 2p^2\ 3p\ ^4D_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4F_{5/2}$ | 5.9 | 2 |
| Fe III | 983.9090 | $3d^6\ ^1I_6$–$3d^5 4p\ ^2K_7$ | 4.4 | 1 |
| Fe III | 985.8240 | $3d^6\ ^3H_4$–$3d^5\ 4p\ ^3G_3$ | 4.4 | 1 |
| O VI (*) | 986.3508 | $1s^2\ 4s\ ^2S_{1/2}$–$1s^2\ 5p\ ^2P_{3/2}$ | 5.6 | 2 |
| Fe III | 986.6370 | $3d^6\ ^1I_6$–$3d^5\ 4p\ ^1H_5$ | 4.4 | 1 |
| Na VI | 988.6130 | $2s^2\ 2p^2\ ^3P_2$–$2s\ 2p^3\ ^5S_2$ | 5.6 | 2 |
| O I | 988.7734 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 3s\ ^3D_3$ | <4.0 | 1 |
| N III | 989.7900 | $2s^2\ 2p\ ^2P_{1/2}$–$2s\ 2p^2\ ^2D_{3/2}$ | 5.0 | 1 |
| O I | 990.2043 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 3s\ ^3D_2$ | <4.0 | 1 |
| O I | 990.8010 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 3s\ ^3D_1$ | <4.0 | 1 |
| Fe III | 991.2320 | $3d^6\ ^3F_4$–$3d^5\ 4p\ ^3D_3$ | 4.4 | 1 |
| N III | 991.5790 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^2D_{5/2}$ | 5.0 | 1 |
| He II (2) | 992.3380 | $2p\ ^2P_{3/2}$–$7d\ ^2D_{5/2}$ | 4.9 | 1 |
| Si II | 992.6829 | $3s^2\ 3p\ ^2P_{3/2}$–$3s^2\ 4d\ ^2D_{5/2}$ | 4.3 | 1 |
| Fe III - Ne VI | 993.0800 | $3d^6\ ^3G_4$–$3d^5\ 4p\ ^3F_3$ | 4.4 | 1 |
| Si III | 993.5100 | $3s\ 3p\ ^3P_0$–$3s\ 4s\ ^3S_1$ | 4.7 | 1 |
| Fe III | 994.2570 | $3d^6\ ^3P_2$–$3d^5\ 4p\ ^3P_1$ | 4.4 | 1 |
| Si VIII | 994.5810 | $2s^2\ 2p^2\ 3p\ ^4D_{7/2}$–$2s^2\ 2p^2\ 3d\ ^4F_{9/2}$ | 5.9 | 2 |
| Fe III | 994.7240 | $3d^6\ ^3G_3$–$3d^5\ 4p\ ^3F_2$ | 4.4 | 1 |
| Fe III | 995.1500 | $3d^6\ ^3F_4$–$3d^5\ 4p\ ^3G_5$ | 4.4 | 1 |
| S II | 996.0000 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 3d\ ^2F_{7/2}$ | 4.5 | 1 |
| Fe III | 997.0810 | $3d^6\ ^3P_2$–$3d^5\ 4p\ ^3P_2$ | 4.4 | 1 |
| Si III | 997.3890 | $3s\ 3p\ ^3P_2$–$3s\ 4s\ ^3S_1$ | 4.7 | 1 |
| Fe III | 997.5990 | $3d^6\ ^3F_3$–$3d^5\ 4p\ ^3G_4$ | 4.4 | 1 |
| Fe III (*) | 997.794 | $3d^6\ ^3F_3$–$3d^5\ 4p\ ^3G_3$ | 4.4 | 1 |
| Si XII/2 | 499.4066 | $1s^2\ 2s\ ^2S_{1/2}$–$1s^2\ 2p\ ^2P_{3/2}$ | 6.2 | 2 |
| Ne VI | 999.1820 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^4P_{5/2}$ | 5.6 | 2 |
| O I - Fe III | 999.4974 | $2s^2\ 2p^4\ ^1D_2$–$2s^2\ 2p^3\ 3s\ ^1P_1$ | <4.0 | 1 |
| Ar VI | 1000.1600 | $3s^2\ 3p\ ^2P_{3/2}$–$3s\ 3p\ ^4P_{5/2}$ | 5.5 | 1 |
| S II | 1000.4860 | $3s^2\ 3p^3\ ^2D_{3/2}$–$3s^2\ 3p^2\ 3d\ ^2F_{5/2}$ | 4.5 | 2 |
| S II | 1000.7500 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 3d\ ^2F_{5/2}$ | 4.4 | 1 |
| Fe III | 1005.106 | $3d^5\ 4p\ ^7P_3$–$3d^5\ 5s\ ^5G_4$ | 4.4 | 1 |
| Si III | 1005.349 | $3s\ 3d\ ^3D_2\ 3s\ 6f\ ^3F_2$ | 4.8 | 1 |
| Ne VI | 1005.69 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^4P_{3/2}$ | 5.6 | 2 |
| N III (2) | 1005.977 | $2s\ 2p^2\ ^2S_{1/2}$–$2p^3\ ^2P_{3/2}$ | 4.9 | 2 |
| S II (2) | 1006.093 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 3d\ ^4D_{7/2}$ | 4.5 | 1 |
| C II | 1009.858 | $2s9\ 2p^2\ ^4P_{1/2}$–$2p^3\ ^4S_{3/2}$ | 4.5 | 1 |
| C II - Fe III | 1010.005 | $3d^6\ ^3P_1$–$3d^5\ 4p\ ^3P_2$ | 4.5 | 1 |
| C II - Ne VI | 1010.371 | $2s\ 2p^2\ ^4P_{5/2}$–$2p^3\ ^4S_{3/2}$ | 4.5 | 1 |
| Fe III | 1012.411 | $3d^6\ ^3P_0$–$3d^5 4p\ ^3P_1$ | 4.4 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| S III | 1012.494 | $3s^2\ 3p^2\ ^3P_0$–$3s\ 3p^3\ ^3P_1$ | 4.8 | 2 |
| S II | 1014.42 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 4s\ ^2P_{3/2}$ | 4.5 | 1 |
| S III (2) | 1015.51 | $3s^2\ 3p^2\ 3P^1$–$3s\ 3p^3\ ^3P_0$ | 4.8 | 1 |
| S III | 1015.76 | $3s^2\ 3p^2\ 3P^1$–$3s\ 3p^3\ ^3P_2$ | 4.8 | 1 |
| Fe III | 1017.254 | $3d^6\ ^3H_6$–$3d^5\ 4p\ ^3H_6$ | 4.4 | 1 |
| Fe III | 1017.745 | $3d^6\ ^3H_5$–$3d^5\ 4p\ ^3H_5$ | 4.4 | 1 |
| Fe III | 1018.286 | $3d^6\ ^3H_4$–$3d^5\ 4p\ ^3H_4$ | 4.4 | 1 |
| Ar XII | 1018.726 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^3\ ^2D_{5/2}$ | 6.4 | 2 |
| Fe III | 1019.789 | $3d^6\ ^3D_3$–$3d^5\ 4p\ ^3P_2$ | 4.4 | 1 |
| S III | 1021.10 | $3s^2\ 3p^2\ ^3P_2$–$3s\ 3p^3\ ^3P_1$ | 4.8 | 1 |
| S III | 1021.32 | $3s^2\ 3p^2\ ^3P_2$–$3s\ 3p^3\ ^3P_2$ | 4.8 | 1 |
| Fe III | 1021.561 | $3d^6\ ^3D_2$–$3d^5\ 4p\ ^3P_1$ | 4.4 | 1 |
| He II | 1025.302 | $2p\ ^2P_{3/2}$–$6d\ ^2D_{5/2}$ | 4.9 | 1 |
| H I Ly-$\beta$ | 1025.722 | $1s\ ^2S_{1/2}$–$3p\ ^2P\ _{3/2}$ | 4.2 | 1 |
| Fe III | 1026.790 | $3d^6\ ^3G_5$–$3d^5\ 4p\ ^3G_5$ | 4.4 | 1 |
| O I | 1027.4307 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 3d\ ^3D_2$ | <4.0 | 1 |
| O I - Fe X | 1028.145 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 3d\ ^5D_2$ | <4.0 | 1 |
| Fe III - S II | 1030.924 | $3d^6\ ^3G_4$–$3d^5\ 4p\ ^3G_4$ | 4.4 | 1 |
| S II | 1031.34 | $3s^2\ 3p^3\ ^2P_{3/2}$–$3s^2\ 3p^2\ 4s\ ^2D_{5/2}$ | 4.5 | 1 |
| O VI | 1031.924 | $1s^2\ 2s\ ^2S_{1/2}$–$1s^2\ 2p\ ^2P_{3/2}$ | 5.6 | 1 |
| Fe III | 1035.7679 | $3d^6\ ^3F_3$–$3d^5\ 4p\ ^3F_3$ | 4.4 | 1 |
| C II | 1036.3367 | $2s^2\ 2p\ ^2P_{1/2}$–$2s\ 2p^2\ ^2S_{1/2}$ | 4.5 | 1 |
| C II | 1037.0182 | $2s^2\ 2p\ ^2P_{3/2}$–$2s\ 2p^2\ ^2S_{1/2}$ | 4.5 | 1 |
| O VI | 1037.614 | $1s^2\ 2s\ ^2S_{1/2}$–$1s^2\ 2p\ ^2P_{1/2}$ | 5.6 | 1 |
| Fe III | 1038.355 | $3d^6\ ^3F_2$–$3d^5\ 4p\ ^3F_2$ | 4.4 | 1 |
| O I | 1039.2303 | $2s^2\ 2p^4\ ^3P_2$–$2s^2\ 2p^3\ 4s\ ^3S_1$ | <4.0 | 1 |
| O I | 1040.9425 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^3\ 4s\ ^3S_1$ | <4.0 | 1 |
| Si XII/2 | 520.665 | $1s^2\ 2s\ ^2S_{1/2}$–$1s^2\ 2p\ ^2P_{1/2}$ | 6.3 | 2 |
| O I | 1041.6876 | $2s^2\ 2p^4\ ^3P_0$–$2s^2\ 2p^3\ 4s\ ^3S_1$ | <4.0 | 1 |
| N I | 1043.08 | $2s^2\ 2p^3\ ^2D_{5/2}$–$2s^2\ 2p^2\ 7d\ ^4D_{7/2}$ | <4.0 | 1 |
| N I | 1043.166 | $2s^2\ 2p^3\ ^2D_{5/2}$–$2s^2\ 2p^2\ 7d\ ^2F_{7/2}$ | <4.0 | 1 |
| N I | 1044.069 | $2s^2\ 2p^3\ ^2D_{3/2}$–$2s^2\ 2p^2\ 7d\ ^2P_{1/2}$ | <4.0 | 1 |
| He I/2 | 522.2128 | $1s^2\ ^1S_0$–$1s\ 4p\ ^1P_1$ | 4.5 | 3 |
| S II - Al IV | 1045.765 | $3s^2\ 3p^3\ ^2D_{5/2}$–$3s^2\ 3p^2\ 3d\ ^4F_{7/2}$ | 4.5 | 2 |
| S II | 1049.0551 | $s^2\ 3p^3\ ^2D_{3/2}$–$3s^2\ 3p^2\ 3d\ ^4F_{3/2}$ | 4.4 | 2 |
| Si VII | 1049.199 | $2s^2\ 2p^4\ ^3P_1$–$2s^2\ 2p^4\ ^1S_0$ | 5.7 | 2 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| S I | 1049.82 | $3s^2\,3p^4\,^3P_2$–$32s^2\,3p^3\,5s\,^3P_2$ | <4.0 | 1 |
| S I | 1050.3 | $3s^2\,3p^4\,^3P_2$–$3s^2\,3p^3\,5s\,^3P_1$ | <4.0 | 1 |
| O III/2 | 525.808 | $2s^2\,2p^2\,^1D_2$–$2s\,2p^3\,^1P_1$ | 4.9 | 2 |
| N I | 1052.0820 | $2s^2\,2p^3\,^2D_{5/2}$–$2s^2\,2p^2\,6d\,^4D_{7/2}$ | <4.0 | 1 |
| N I | 1053.0880 | $2s^2\,2p^3\,^2D_{3/2}$–$2s^2\,2p^2\,6d\,^4D_{7/2}$ | <4.0 | 1 |
| N I | 1053.1840 | $2s^2\,2p^3\,^2D_{3/2}$–$2s^2\,2p^2\,6d\,^2P_{1/2}$ | <4.0 | 1 |
| Al VII | 1053.9980 | $2s^2\,2p^3\,^4S_{3/2}$–$2s^2\,2p^3\,^2P_{3/2}$ | 5.7 | 2 |
| Ar XII | 1054.687 | $2s^2\,2p^3\,^4S_{3/2}$–$2s^2\,2p^3\,^2D_{3/2}$ | 6.2 | 2 |
| Al VII | 1056.917 | $2s^2\,2p^3\,^4S_{3/2}$–$2s^2\,2p^3\,^2P_{1/2}$ | 5.7 | 2 |
| Al VIII | 1057.8900 | $2p^2\,^3P_1$–$2p^2\,^1S_0$ | 5.9 | 1 |
| Fe II | 1059.5640 | $3d^6\,4s\,^6D_{7/2}$–$3d^5\,4s\,4p\,^6P_{7/2}$ | 4.2 | 1 |
| Fe III | 1061.1270 | $3d^6\,^3D_2$–$3d^5\,4p\,^3D_1$ | 4.4 | 1 |
| Fe III | 1061.7080 | $3d^6\,^3D_2$–$3d^5\,4p\,^3D_2$ | 4.4 | 1 |
| Fe III | 1062.2720 | $3d^6\,^3D_2$–$3d^5\,4p\,^3D_3$ | 4.4 | 1 |
| S IV | 1062.6710 | $3s^2\,3p\,^2P_{1/2}$–$3s\,3p^2\,^2D_{3/2}$ | 5.0 | 1 |
| Fe III | 1063.3090 | $3d^6\,^3D_3$–$3d^5\,4p\,^3D_2$ | 4.4 | 1 |
| Ar VII - Fe II | 1063.55 | $3s\,3p\,^1P_1$–$3p^2\,^1D_2$ | 5.6 | 1 |
| Fe III | 1063.8719 | $3d^6\,^3D_3$–$3d^5\,4p\,^3D_3$ | 4.4 | 1 |
| Fe III | 1064.6610 | $3d^6\,^3F_2$–$3d^5\,4p\,^3G_3$ | 4.4 | 1 |
| Al IV (*) | 1064.8910 | $2s^2\,2p^5\,3d\,^3D_3$–$2s^2\,2p^5\,4f$... | 5.0 | 1 |
| C II | 1065.8914 | $2s\,2p^2\,^2D_{5/2}$–$2p^3\,^2P_{3/2}$ | 4.5 | 1 |
| Fe III (2) | 1066.143 | $3d^6\,^3G_5$–$3d^5\,4p\,^3H_6$ | 4.4 | 1 |
| Si IV | 1066.6290 | $3d\,^2D_{5/2}$–$4f\,^2F_{7/2}$ | 4.9 | 1 |
| N I | 1067.3860 | $2s^2\,2p^3\,^2D_{5/2}$–$2s^2\,2p^2\,5d\,^4D_{7/2}$ | <4.0 | 1 |
| N I | 1067.6160 | $2s^2\,2p^3\,^2D_{5/2}$–$2s^2\,2p^2\,5d\,^2F_{7/2}$ | <4.0 | 1 |
| Fe III | 1068.1899 | $3d^6\,^3G_4$–$3d^5\,4p\,^3H_5$ | 4.4 | 1 |
| Fe III-Al V (*) | 1068.2990 | $3d^6\,^3F_4$–$3d^5\,4p\,^3G_5$ | 4.4 | 1 |
| N I | 1068.477 | $2s^2\,2p^3\,^2D_{3/2}$–$2s^2\,2p^2\,5d\,^4P_{5/2}$ | <4.0 | 1 |
| N I | 1068.6810 | $2s^2\,2p^3\,^2D_{5/2}$–$2s^2\,2p^2\,5d\,^4F_{7/2}$ | <4.0 | 1 |
| N I | 1069.1100 | $2s^2\,2p^3\,^2D_{5/2}$–$2s^2\,2p^2\,5d\,^4F_{5/2}$ | <4.0 | 1 |
| N I (*) | 1071.4410 | $2s^2\,2p^3\,^2D_{3/2}$–$2s^2\,2p^2\,6s\,^4P_{1/2}$ | <4.0 | 1 |
| Fe III | 1071.7460 | $3d^6\,^3G_4$–$3d^5\,4p\,^3F_3$ | 4.4 | 1 |
| S IV | 1072.9900 | $3s^2\,3p\,^2P_{3/2}$–$3s\,3p^2\,^2D_{5/2}$ | 5.0 | 1 |
| S IV | 1073.5200 | $3s^2\,3p\,^2P_{3/2}$–$3s\,3p^2\,^2D_{3/2}$ | 5.0 | 1 |
| He I/2 | 537.0296 | $1s^2\,^1S_0$–$1s\,3p\,^1P_1$ | 4.5 | 1 |
| Fe III | 1075.0240 | $3d^6\,^3G_3$–$3d^54p\,^3F_2$ | 4.4 | 1 |
| S III | 1077.1300 | $3s^2\,3p^2\,^1D_2$–$3s^2\,3p\,3d\,^1D_2$ | 4.7 | 1 |
| Fe III (*) | 1083.1760 | $3d^6\,^3P_0$–$3d^5\,4p\,^3D_1$ | 4.4 | 1 |
| N II | 1083.9900 | $2s^2\,2p^2\,^3P_0$–$2s\,2p^3\,^3D_1$ | 4.7 | 1 |
| N II (2) | 1084.5800 | $2s^2\,2p^2\,^3P_1$–$2s\,2p^3\,^3D_2$ | 4.7 | 1 |
| He II | 1084.9750 | $2p\,^2P_{3/2}$–$5d\,^2D_{5/2}$ | 4.9 | 1 |
| N II | 1085.5460 | $2s^2\,2p^2\,^3P_2$–$2s\,2p^3\,^3D_2$ | 4.7 | 1 |
| N II | 1085.7010 | $2s^2\,2p^2\,^3P_2$–$2s\,2p^3\,^3D_3$ | 4.7 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| C II | 1092.7260 | 2s 2p$^2$ $^2$P$_{3/2}$–2s 2p 3d $^2$P$_{3/2}$ | 4.5 | 1 |
| Si III | 1093.1050 | 3s 3d $^3$D$_2$–3s 6p $^3$P$_1$ | 4.8 | 1 |
| Al V | 1093.2200 | 2s$^2$ 2p$^4$ 3p $^2$P$_{3/2}$–2s$^2$ 2p$^4$ 3d $^2$P$_{3/2}$ | 5.4 | 1 |
| S II | 1096.5699 | 3s$^2$ 3p$^3$ $^2$D$_{3/2}$–3s$^2$ 3p$^2$ 3d $^2$P$_{1/2}$ | 4.4 | 1 |
| Fe III | 1096.6060 | 3d$^6$ $^3$F$_4$–3d$^5$ 4p $^3$D$_3$ | 4.4 | 1 |
| N I | 1097.2371 | 2s$^2$ 2p$^3$ $^2$D$_{5/2}$–2s$^2$ 2p$^2$ 4d $^2$F$_{7/2}$ | <4.0 | 1 |
| N I (*) - S I | 1097.4919 | 2s$^2$ 2p$^3$ $^2$D$_{3/2}$–2s$^2$ 2p$^2$ 4d $^4$P$_{5/2}$ | <4.0 | 1 |
| N I | 1098.0970 | 2s$^2$ 2p$^3$ $^2$D$_{3/2}$–2s$^2$ 2p$^2$ 4d $^4$F$_{5/2}$ | <4.0 | 1 |
| Fe III | 1098.2469 | 3d$^6$ $^3$P$_2$–3d$^5$ 4p $^3$D$_3$ | 4.4 | 1 |
| N I | 1099.0420 | 2s$^2$ 2p$^3$ $^2$D$_{5/2}$–2s$^2$ 2p$^2$ 4d $^4$F$_{5/2}$ | <4.0 | 1 |
| S IV (*) | 1099.53 | 3s 3p$^2$ $^2$D$_{3/2}$–3p$^3$ $^2$D$_{3/2}$ | 5.2 | 1 |
| Al XI/2 | 550.0300 | 1s$^2$ 2s $^2$S$_{1/2}$–1s$^2$ 2p $^2$P$_{3/2}$ | 6.1 | 1 |
| S II | 1102.3199 | 3s$^2$ 3p$^3$ $^2$D$_{5/2}$–3s 3p$^4$ $^2$P$_{3/2}$ | 4.4 | 1 |
| C I | 1103.3000 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 23d $^1$F$_3$ | <4.0 | 1 |
| C I | 1103.6000 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 22d $^1$F$_3$ | <4.0 | 1 |
| C I | 1103.8650 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 20d $^1$P$_1$ | <4.0 | 1 |
| C I | 1104.1650 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 20d $^1$F$_3$ | <4.0 | 1 |
| C I | 1104.6270 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 18d $^1$P$_1$ | <4.0 | 1 |
| C I | 1104.9420 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 17d $^1$P$_1$ | <4.0 | 1 |
| C I | 1105.142 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 17d $^1$P$_1$ | <4.0 | 1 |
| C I | 1105.4720 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 17d $^1$F$_3$ | <4.0 | 1 |
| C I | 1105.7321 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 16d $^1$P$_1$ | <4.0 | 1 |
| C I | 1106.0630 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 16d $^1$P$_1$ | <4.0 | 1 |
| C I | 1106.2629 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 15d $^1$P$_1$ | <4.0 | 1 |
| C I | 1106.45 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 15d $^1$P$_1$ | <4.0 | 1 |
| C I | 1106.7810 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 15d $^1$P$_1$ | <4.0 | 1 |
| C I | 1107.3470 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 14d $^1$P$_1$ | <4.0 | 1 |
| C I | 1107.6700 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 14d $^1$P$_1$ | <4.0 | 1 |
| C I | 1107.9080 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 14d $^3$D$_1$ | <4.0 | 1 |
| C I - O IV | 1108.1090 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 14d $^3$D$_1$ | <4.0 | 1 |
| C I | 1108.4410 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 14d $^3$D$_1$ | <4.0 | 1 |
| C I | 1108.8040 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 13d $^1$F$_3$ | <4.0 | 1 |
| C I - O IV/2 | 1109.0310 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 13d $^3$D$_1$ | <4.0 | 1 |
| C I | 1109.2330 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 13d $^3$D$_1$ | <4.0 | 1 |
| C I | 1109.6050 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 13s $^1$P$_1$ | <4.0 | 1 |
| Si III | 1109.9650 | 3s 3p $^3$P$_1$–3s 3d $^3$D$_2$ | 4.8 | 1 |
| C I | 1110.2111 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 13s $^1$P$_1$ | <4.0 | 1 |
| O IV/2 | 555.2610 | 2s$^2$ 2p $^2$P$_{3/2}$–2s 2p$^2$ $^2$P$_{1/2}$ | 5.4 | 1 |
| C I | 1111.0100 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 12d $^3$F$_3$ | <4.0 | 1 |
| C I | 1111.4210 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 11d $^1$P$_1$ | <4.0 | 1 |
| C I | 1111.6240 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 11d $^1$P$_1$ | <4.0 | 1 |
| C I | 1112.0031 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 11d $^1$F$_3$ | <4.0 | 1 |
| C I | 1112.2690 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 11d $^3$D$_1$ | <4.0 | 1 |
| C I | 1112.4720 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 11d $^3$D$_1$ | <4.0 | 1 |
| C I | 1112.8060 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 11d $^3$D$_1$ | <4.0 | 1 |
| Si III | 1113.2280 | 3s 3p $^3$P$_2$–3s 3d $^3$D$_3$ | 4.8 | 1 |
| C I (*) | 1113.7930 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 10d $^1$P$_1$ | <4.0 | 1 |
| C I | 1113.9960 | 2s$^2$ 2p$^2$ $^3$P$_1$–2s$^2$ 2p 10d $^1$P$_1$ | <4.0 | 1 |
| C I | 1114.3800 | 2s$^2$ 2p$^2$ $^3$P$_2$–2s$^2$ 2p 10d $^1$P$_1$ | <4.0 | 1 |
| C I | 1114.6281 | 2s$^2$ 2p$^2$ $^3$P$_0$–2s$^2$ 2p 10d $^3$D$_1$ | <4.0 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| C I | 1114.8300 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 10d\ ^3D_1$ | <4.0 | 1 |
| C I | 1115.2250 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 10d\ ^3F_3$ | <4.0 | 1 |
| Ca X/2 | 557.765 | $3s\ ^2S_{1/2}–3p\ ^2P_{3/2}$ | 5.8 | 2 |
| C I | 1117.000 | $2s^2\ 2p^2\ ^3P_0–2s^2\ 2p\ 9d\ ^1P_1$ | <4.0 | 1 |
| C I | 1117.2050 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 9d\ ^1P_1$ | <4.0 | 1 |
| C I | 1117.5811 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 9d\ ^3P_2$ | <4.0 | 1 |
| C I | 1117.8660 | $2s^2\ 2p^2\ ^3P_0–2s^2\ 2p\ 9d\ ^3D_1$ | <4.0 | 1 |
| C I | 1118.1801 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 9d\ ^3F_2$ | <4.0 | 1 |
| C I | 1118.4910 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 9d\ ^3F_3$ | <4.0 | 1 |
| Al IV | 1118.8240 | $2s^2\ 2p^5\ 3s\ ^1P_1–2s^2\ 2p^5\ 3p\ ^1S_0$ | 5.0 | 1 |
| C I | 1121.4520 | $2s^2\ 2p^2\ ^3P_0–2s^2\ 2p\ 8d\ ^3P_1$ | <4.0 | 1 |
| C I | 1121.6580 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 8d\ ^3P_1$ | <4.0 | 1 |
| C I | 1122.098 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 8d\ ^3P_2$ | <4.0 | 1 |
| C I | 1122.3340 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 8d\ ^3D_3$ | <4.0 | 1 |
| Fe III | 1122.526 | $3d^6\ ^5D_4–3d^5\ 4p\ ^5P_3$ | 4.4 | 1 |
| C I | 1122.7250 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 8d\ ^3F_2$ | <4.0 | 1 |
| C I | 1122.9850 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 8d\ ^3D_1$ | <4.0 | 1 |
| Ne VII/2 | 561.7280 | $2s\ 2p\ ^3P_2–2s\ 2p\ ^3P_2$ | 5.7 | 1 |
| Fe III | 1124.8831 | $3d^6\ ^5D_3–3d^5\ 4p\ ^5P_2$ | 4.4 | 1 |
| Ne VI/2 | 562.798 | $2s^2\ 2p\ ^2P_{3/2}–2s\ 2p^2\ ^2D_{5/2}$ | 5.6 | 2 |
| Ne VII/2 | 562.9920 | $2s\ 2p\ ^3P_1–2p^2\ ^3P_0$ | 5.7 | 1 |
| S III | 1126.53800 | $3s\ 3p^3\ ^3D_1–3s^2\ 3p\ 4p\ ^3P_1$ | 4.7 | 2 |
| Fe III | 1126.7280 | $3d^6\ ^5D_2–3d^5\ 4p\ ^5P_1$ | 4.4 | 1 |
| S III | 1126.8500 | $3s\ 3p^3\ ^3D_2–3s^2\ 3p\ 4p\ ^3P_1$ | 4.7 | 1 |
| Fe III | 1128.0500 | $3d^6\ ^5D_3–3d^5\ 4p\ ^5P_3$ | 4.4 | 1 |
| Si IV | 1128.3400 | $3p\ ^2P_{3/2}–3d\ ^2D_{5/2}$ | 4.9 | 1 |
| Fe III | 1128.7230 | $3d^6\ ^5D_2–3d^5\ 4p\ ^5P_2$ | 4.4 | 1 |
| Ne VII/2 - Fe III | 564.5290 | $2s\ 2p\ ^3P_2–2p^2\ ^3P_1$ | 5.7 | 1 |
| C I | 1129.4050 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 7d\ ^3D_1$ | <4.0 | 1 |
| Al V | 1129.6200 | $2s^2\ 2p^4\ 3p\ ^2D_{3/2}–2s^2\ 2p^4\ 3d\ ^2F_{5/2}$ | 5.4 | 1 |
| C I | 1129.9240 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 7d\ ^3F_3$ | <4.0 | 1 |
| C I | 1130.1710 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 7d\ ^1D_2$ | <4.0 | 1 |
| Fe III | 1130.4041 | $3d^6\ ^5D_0–3d^5\ 4p\ ^5P_1$ | 4.4 | 1 |
| Fe III - Si IV | 1131.1940 | $3d^6\ ^5D_1–3d^5\ 4p\ ^5P_2$ | 4.4 | 1 |
| S II | 1131.6500 | $3s^2\ 3p^3\ ^2P_{3/2}–3s^2\ 3p^2\ 4s\ ^2P_{1/2}$ | 4.4 | 1 |
| Fe III | 1131.9139 | $3d^6\ ^5D_2–3d^5\ 4p\ ^5P_3$ | 4.4 | 1 |
| Ca XIII | 1133.68 | $2s^2\ 2p^4\ ^3P_2–2s^2\ 2p^4\ ^1D_2$ | 6.4 | 3 |
| N I | 1134.1650 | $2s^2\ 2p^3\ ^4S_{3/2}–2s\ 2p^4\ ^4P_{1/2}$ | <4.0 | 1 |
| N I | 1134.4147 | $2s^2\ 2p^3\ ^4S_{3/2}–2s\ 2p^4\ ^4P_{3/2}$ | <4.0 | 1 |
| N I | 1134.9801 | $2s^2\ 2p^3\ ^4S_{3/2}–2s\ 2p^4\ ^4P_{5/2}$ | <4.0 | 1 |
| Si VII | 1135.3530 | $2s^2\ 2p^2\ 3d\ ^4F_{3/2}–2s^2\ 2p^2\ 3d\ ^2S_{1/2}$ | 5.7 | 1 |
| Al XI/2 | 568.1500 | $1s^2\ 2s\ ^2S_{1/2}–1s^2\ 2p\ ^2P_{1/2}$ | 6.1 | 1 |
| Ne V | 1136.5100 | $2s^2\ 2p^2\ ^3P_1–2s\ 2p^3\ ^5S_2$ | 5.6 | 2 |
| Ne V/2 | 568.42 | $2s^2\ 2p^2\ ^3P_0–2s\ 2p^3\ ^3D_1$ | 5.6 | 1 |
| Si V - Si VII | 1137.2670 | $2p^5\ 3s\ ^3P_2–2p^5\ 3p\ ^1P_1$ | 5.5 | 1 |
| S IV (*) | 1138.1400 | $3s\ 3p^2\ ^2S_{1/2}–3p^3\ ^2P_{1/2}$ | 5.0 | 1 |
| C I | 1138.3831 | $2s^2\ 2p^2\ ^3P_0–2s^2\ 2p\ 6d\ ^3P_1$ | <4.0 | 1 |
| C I | 1138.5570 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 6d\ ^3P_0$ | <4.0 | 1 |
| Fe II (?) | 1138.64 | $3d^6\ 4s\ ^6D_{7/2}–3d^5\ 4s\ 4p\ ^6D_{7/2}$ | 4.2 | 1 |
| C I - C II | 1138.9460 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 6d\ ^3P_1$ | <4.0 | 1 |
| C II | 1139.3320 | $2s\ 2p^2\ ^2P_{3/2}–2s\ 2p\ 3d\ ^2D_{5/2}$ | 4.5 | 1 |
| C II | 1139.4730 | $2s\ 2p^2\ ^2P_{3/2}–2s\ 2p\ 3d\ ^2D_{3/2}$ | 4.5 | 1 |
| C I | 1139.8120 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 6d\ ^3D_3$ | <4.0 | 1 |
| C I (3)(*) | 1140.005 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 6d\ ^3D_1$ | <4.0 | 1 |
| C I | 1140.3571 | $2s^2\ 2p^2\ ^3P_1–2s^2\ 2p\ 6d\ ^3F_2$ | <4.0 | 1 |
| C I | 1140.6400 | $2s^2\ 2p^2\ ^3P_2–2s^2\ 2p\ 6d\ ^3F_3$ | <4.0 | 1 |
| Fe III | 1141.2720 | $3d^6\ ^1G_4–3d^5\ 4p\ ^1H_5$ | 4.4 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{\max}$ | Ref. |
|---|---|---|---|---|
| C II | 1141.6250 | 2s $2p^2$ $^2D_{5/2}$–2s 4p $^2P_{3/2}$ | 4.5 | 1 |
| Si III - Si VII | 1142.2281 | $3p^2$ $^3P_1$–3p 3d $^3D_1$ | 4.7 | 1 |
| Si VII | 1142.441 | $2p^3$ 3s $^5S_2$–$2p^3$ 3p $^5P_2$ | 5.7 | 3 |
| Fe III | 1142.9550 | $3d^6$ $^3D_3$–$3d^5$ 4p $^3F_4$ | 4.4 | 1 |
| Fe II (*) | 1143.2260 | $3d^6$ 4s $^6D_{9/2}$–$3d^5$ 4s 4p $^6F_{9/2}$ | 4.2 | 1 |
| Fe III-Si VII | 1143.5450 | $3d^6$ $^3D_1$–$3d^5$ 4p $^3F_2$ | 4.4 | 1 |
| Ne V/2 | 572.1060 | $2s^2$ $2p^2$ $^3P_2$–2s $2p^3$ $^3D_2$ | 5.6 | 1 |
| Ne V/2 | 572.3360 | $2s^2$ $2p^2$ $^3P_2$–2s $2p^3$ $^3D_3$ | 5.6 | 1 |
| Fe II | 1144.9390 | $3d^6$ 4s $^6D_{9/2}$–$3d^5$ 4s 4p $^6F_{11/2}$ | 4.2 | 1 |
| Ne V | 1145.6000 | $2s^2$ $2p^2$ $^3P_2$–2s $2p^3$ $^5S_2$ | 5.6 | 1 |
| Fe II | 1146.8300 | $3d^6$ 4s $^6D_{3/2}$–$3d^5$ 4s 4p $^6D_{5/2}$’ | 4.2 | 1 |
| Fe II | 1147.4091 | $3d^6$ 4s $^6D_{7/2}$–$3d^5$ 4s 4p $^6F_{7/2}$ | 4.2 | 1 |
| Fe II - Ca X | 1148.0790 | $3d^6$ 4s $^6D_{3/2}$–$3d^5$ 4s 4p $^6D_{3/2}$ | 4.2 | 1 |
| Fe II | 1148.2770 | $3d^6$ 4s $^6D_{7/2}$–$3d^5$ 4s 4p $^6F_{9/2}$ | 4.2 | 1 |
| Ca III (*) | 1148.3990 | $3s^2$ $3p^5$ 3d $^3P_1$–$3s^2$ $3p^5$ 4p $^1S_0$ | 4.5 | 1 |
| Si VI | 1148.6300 | $2p^4$ 3s $^4P_{3/2}$–$2p^4$ 3p $^4D_{5/2}$ | 5.6 | 1 |
| Fe II | 1149.5890 | $3d^6$ 4s $^6D_{1/2}$–$3d^5$ 4s 4p $^6D_{3/2}$ | 4.2 | 1 |
| S I (?) | 1149.9900 | $3s^2$ $3p^4$ $^1D_2$–$3s^2$ $3p^3$ 9s $^1D_0$ | <4.0 | 1 |
| Fe II (*) | 1150.2900 | $3d^6$ 4s $^6D_{5/2}$–$3d^5$ 4s 4p $^6F_{3/2}$ | 4.2 | 1 |
| Fe II | 1150.4690 | $3d^6$ 4s $^6D_{1/2}$–$3d^5$ 4s 4p $^6F_{1/2}$ | 4.2 | 1 |
| Fe II (*) | 1150.6851 | $3d^6$ 4s $^6D_{5/2}$–$3d^5$ 4s 4p $^6F_{5/2}$ | 4.2 | 1 |
| O III | 1150.8820 | 2s $2p^3$ $^3S_1$–$2p^4$ $^3P_1$ | 4.9 | 1 |
| Fe II | 1151.146 | $3d^6$ 4s $^6D_{5/2}$–$3d^5$ 4s 4p $^6F_{7/2}$ | 4.2 | 1 |
| O I | 1152.1510 | $2s^2$ $2p^4$ $^1D_2$–$2s^2$ $2p^3$ 3s $^1D_2$ | <4.0 | 1 |
| Fe II - Si VI | 1152.8750 | $3d^6$ 4s $^6D_{3/2}$–$3d^5$ 4s 4p $^6F_{3/2}$ | 4.2 | 1 |
| Fe II | 1153.2720 | $3d^6$ 4s $^6D_{3/2}$–$3d^5$ 4s 4p $^6F_{5/2}$ | 4.2 | 1 |
| Fe II | 1154.3990 | $3d^6$ 4s $^6D_{1/2}$–$3d^5$ 4s 4p $^6F_{3/2}$ | 4.2 | 1 |
| C I | 1155.8090 | $2s^2$ $2p^2$ $^3P_0$–$2s^2$ 2p 5d $^3P_1$ | <4.0 | 1 |
| C I | 1156.1990 | $2s^2$ $2p^2$ $^3P_1$–$2s^2$ 2p 5d $^3P_2$ | <4.0 | 1 |
| S I | 1156.2600 | $3s^2$ $3p^4$ $^3P_2$–$3s^2$ $3p^3$ 3d $^3P_1$ | <4.0 | 1 |
| C I | 1156.5601 | $2s^2$ $2p^2$ $^3P_2$–$2s^2$ 2p 5d $^3P_2$ | <4.0 | 1 |
| C I | 1157.4050 | $2s^2$ $2p^2$ $^3P_1$–$2s^2$ $2p^6$ $^1P_1$ | <4.0 | 1 |
| C I | 1157.7700 | $2s^2$ $2p^2$ $^3P_1$–$2s^2$ $2p^5$ $^3D_2$ | <4.0 | 1 |
| C I | 1158.0190 | $2s^2$ $2p^2$ $^3P_2$–$2s^2$ $2p^5$ $^3D_3$ | <4.0 | 1 |
| C I | 1158.397 | $2s^2$ $2p^2$ $^3P_0$–$2s^2$ 2p 6s $^3P_1$ | <4.0 | 1 |
| C I | 1158.7321 | $2s^2$ $2p^2$ $^3P_1$–$2s^2$ 2p 5d $^3F_2$ | <4.0 | 1 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| C I | 1158.9670 | $2s^2\ 2p^2\ ^3P_2$–$2s^2\ 2p\ 5d\ ^3F_3$ | <4.0 | 1 |
| C I | 1159.1260 | $2s^2\ 2p^2\ ^3P_2$–$2s^2\ 2p\ 5d\ ^3F_2$ | <4.0 | 1 |
| Ni II | 1159.5100 | $3d^8\ 4s\ ^4F_{9/2}$–$3d^7\ 4s\ 4p\ ^4G_{9/2}$ | 4.1 | 1 |
| S I | 1160.7800 | $3s^2\ 3p^4\ ^1D_4$–$3s^2\ 3p^3\ 8s\ ^1D_2$ | <4.0 | 1 |
| S I | 1161.3500 | $3s^2\ 3p^4\ ^3P_1$–$3s^2\ 3p^3\ 3d\ ^3P_2$ | <4.0 | 1 |
| S I | 1161.5699 | $3s^2\ 3p^4\ ^3P_1$–$3s^2\ 3p^3\ 3d\ ^3P_1$ | <4.0 | 1 |
| S I | 1161.7200 | $3s^2\ 3p^4\ ^3P_1$–$3s^2\ 3p^3\ 3d\ ^3P_0$ | <4.0 | 1 |
| S I | 1161.9700 | $3s^2\ 3p^4\ ^1D_2$–$3s^2\ 3p^3\ 6d\ ^1D_2$ | <4.0 | 1 |
| N I | 1163.8835 | $2s^2\ 2p^3\ ^2D_{5/2}$–$2s^2\ 2p^2\ 3d\ ^2D_{5/2}$ | <4.0 | 1 |
| N I | 1164.0016 | $2s^2\ 2p^3\ ^2D_{3/2}$–$2s^2\ 2p^2\ 3d\ ^2D_{5/2}$ | <4.0 | 1 |
| N I | 1167.4484 | $2s^2\ 2p^3\ ^2D_{5/2}$–$2s^2\ 2p^2\ 3d\ ^2F_{7/2}$ | <4.0 | 1 |
| Si VII | 1167.775 | $2s^3\ 3s\ ^3S_1$–$2p^3\ 3p\ ^3P_2$ | 5.7 | 3 |
| S I | 1168.0400 | $2s^2\ 3p^4\ ^3P_2$–$3s^2\ 3p^3\ 3d\ ^1D_2$ | <4.0 | 1 |
| N I (2) | 1168.3344 | $2s^2\ 2p^3\ ^2D_{3/2}$–$2s^2\ 2p^2\ 3d\ ^4P_{5/2}$ | <4.0 | 1 |
| He I/2 | 584.334 | $1s^2\ ^1S_0$–$1s\ 2p\ ^1P_1$ | 4.5 | 1 |
| C III | 1174.9330 | $2s\ 2p\ ^3P_1$–$2p^2\ ^3P_2$ | 4.9 | 1 |
| C III | 1175.2629 | $2s\ 2p\ ^3P_0$–$2p^2\ ^3P_1$ | 4.9 | 1 |
| C III | 1175.7111 | $2s\ 2p\ ^3P_2$–$2p^2\ ^3P_2$ | 4.9 | 1 |
| C III | 1175.9871 | $2s\ 2p\ ^3P_1$–$2p^2\ ^3P_0$ | 4.9 | 1 |
| C III | 1176.3700 | $2s\ 2p\ ^3P_2$–$2p^2\ ^3P_1$ | 4.9 | 1 |
| Ni II (*) | 1177.109 | $3d^8\ 4s\ ^4F_{7/2}$–$3d^7\ 4s\ 4p\ ^4F_{9/2}$ | 4.1 | 1 |
| N I | 1177.6948 | $2s^2\ 2p^3\ ^2D_{3/2}$–$2s^2\ 2p^2\ 4s\ ^2P_{1/2}$ | <4.0 | 1 |
| Si III | 1178.004 | $3p^2\ ^3P_2$–$3s\ 5p\ ^3P_2$ | 4.7 | 1 |
| Ni II | 1178.5710 | $3d^8\ 4s\ ^2F_{5/2}$–$3d^7\ 4s\ 4p\ ^2G_{7/2}$ | 4.1 | 1 |
| S I | 1181.5900 | $3s^2\ 3p^4\ ^1D_2$–$3s^2\ 3p^3\ 5d\ ^1D_2$ | <4.0 | 1 |
| Si VIII | 1182.4550 | $2s^2\ 2p^2\ 3s\ ^4P_{1/2}$–$2s^2\ 2p^2\ 3p\ ^4D_{3/2}$ | 5.9 | 2 |
| He I/2 (*) | 591.413 | $1s^2\ ^1S_0$–$1s\ 2p\ ^3P_1$ | 4.5 | 2 |
| Fe II | 1183.4380 | $3d^7\ a4f\ ^4F_{7/2}$–$3d^6\ 4p\ v4d\ ^4D_{7/2}$ | 4.2 | 1 |
| Fe II | 1183.8290 | $3d^6\ 4s\ ^4D_{7/2}$–$3d^5\ 4s\ 4p\ ^4F_{9/2}$ | 4.2 | 1 |
| Si VIII | 1183.9950 | $2s^2\ 2p^2\ 3s\ ^4P_{3/2}$–$2s^2\ 2p^2\ 3p\ ^4D_{5/2}$ | 5.9 | 2 |
| N III | 1184.5140 | $2s\ 2p^2\ ^2P_{3/2}$–$2p^3\ ^2P_{3/2}$ | 5.0 | 1 |
| Fe II | 1185.7120 | $3d^7\ a4f\ ^4F_{7/2}$–$3d^6\ 4p\ 4d\ ^4D_{5/2}$ | 4.2 | 1 |
| Fe II | 1187.4170 | $3d^6\ 4s\ a4d\ ^4D_{3/2}$–$3d^5\ 4p\ 4do\ ^4D_{5/2}$ | 4.2 | 1 |
| C I | 1188.8330 | $2s^2\ 2p^2\ ^3P_0$–$2s^2\ 2p\ 4d\ ^3P_1$ | <4.0 | 1 |
| C I | 1188.9919 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p\ 4d\ ^3P_0$ | <4.0 | 1 |
| C I | 1189.2490 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p\ 4d\ ^3P_2$ | <4.0 | 1 |
| C I | 1189.4470 | $2s^2\ 2p^2\ ^3P_2$–$2s^2\ 2p\ 4d\ ^3P_1$ | <4.0 | 1 |
| C I | 1189.6310 | $2s^2\ 2p^2\ ^3P_2$–$2s^2\ 2p\ 4d\ ^3P_2$ | <4.0 | 1 |
| Mg VII | 1189.8400 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p^2\ ^1S_0$ | 5.8 | 1 |
| Mg VI | 1190.0699 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^3\ ^2P_{3/2}$ | 5.6 | 1 |
| Si III | 1190.1700 | $3s^2\ 3p^2\ ^3P_0$–$3s\ 3p^3\ ^3D_1$ | 4.7 | 1 |
| Si II | 1190.4156 | $3s^2\ 3p\ ^2P_{1/2}$–$3s\ 3p^2\ ^2P_{3/2}$ | 4.3 | 1 |
| Mg VI | 1191.6400 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^3\ ^2P_{1/2}$ | 5.6 | 1 |
| C I | 1191.8380 | $2s^2\ 2p^2\ ^3P_2$–$2s^2\ 2p\ 4d\ ^1F_3$ | <4.0 | 1 |
| C I (2) | 1193.0090 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p\ 4d\ ^3D_2$ | <4.0 | 1 |
| Si II | 1193.2910 | $3s^2\ 3p\ ^2P_{1/2}$–$3s\ 3p^2\ ^2P_{1/2}$ | 4.3 | 2 |
| C I | 1193.6790 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p\ 5s\ ^3P_2$ | <4.0 | 1 |
| S III - Ca VIII/2 | 1194.0490 | $3s^2\ 3p^2\ ^3P_1$–$3s\ 3p^3\ ^3D_2$ | 4.8 | 2 |
| S III - Si II | 1194.4430 | $3s^2\ 3p^2\ ^3P_1$–$3s\ 3p^3\ ^3D_1$ | 4.8 | 2 |
| S X | 1196.2170 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^3\ ^2D_{5/2}$ | 6.1 | 2 |
| Si II | 1197.3950 | $3s^2\ 3p\ ^2P_{3/2}$–$3s\ 3p^2\ ^2P_{1/2}$ | 4.3 | 2 |
| C I (*) | 1197.8770 | $2s^2\ 2p^2\ ^3P_1$–$2s^2\ 2p\ 4d\ ^1D_2$ | <4.0 | 1 |
| S V - O III/2 | 1199.180 | $3s^2\ ^1S_0$–$3s\ 3p\ ^3P_1$ | 5.2 | 2 |
| N I | 1199.5520 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3s\ ^4P_{5/2}$ | <4.0 | 2 |
| N I | 1200.2260 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3s\ ^4P_{3/2}$ | <4.0 | 2 |
| N I | 1200.7120 | $2s^2\ 2p^3\ ^4S_{3/2}$–$2s^2\ 2p^2\ 3s\ ^4P_{1/2}$ | <4.0 | 2 |
| S III | 1200.9611 | $3s^2\ 3p^2\ ^3P_2$–$3s\ 3p^3\ ^3D_3$ | 4.8 | 2 |
| S I | 1204.35 | $3s^2\ 3p^4\ ^3P_2$–$3s^2\ 3p^3\ 15d\ ^3D_3$ | <4.0 | 1 |
| Si III (2) | 1206.5020 | $3s^2\ ^1S_0$–$3s\ 3p\ ^1P_1$ | 4.7 | 2 |

**Table 2.** continued.

| Ions | $\lambda_t$ (Å) | Transition | $\log(T)_{max}$ | Ref. |
|---|---|---|---|---|
| O V | 1218.3929 | $2s^2\ ^1S_0–2s\ 2p\ ^3P_1$ | 5.5 | 2 |
| Mg X/2 | 609.7940 | $1s^2\ 2s\ ^2S_{1/2}–1s^2\ 2p\ ^2P_{3/2}$ | 6.0 | 2 |
| S I (2) | 1224.4790 | $3^2\ 3p^4\ ^3P_1–3^2\ 3p^3\ 9d\ ^3D_2$ | <4.0 | 1 |
| N I (2)(*) | 1228.7911 | $2s^2\ 2p^3\ ^2P_{3/2}–2s^2\ 2p^2\ 4d\ ^2P_{3/2}$ | <4.0 | 1 |
| N I (*) | 1228.9070 | $2s^2\ 2p^3\ ^2P_{3/2}–2s^2\ 2p^2\ 4d\ ^4F_{5/2}$ | <4.0 | 1 |
| S I | 1229.6080 | $3s^2\ 3p^4\ ^3P_2–3^2\ 3p^3\ 9s\ ^3S_1$ | <4.0 | 1 |
| S I | 1230.4730 | $3s^2\ 3p^4\ ^3P_1–3^2\ 3p^3\ 8d\ ^3D_2$ | <4.0 | 1 |
| Si VIII | 1232.57 | $2s^2\ 2p^3\ 3s\ ^4P_{5/2}–2s^2\ 2p^3\ 3p\ ^4D_{5/2}$ | 5.9 | 3 |
| S I | 1235.6240 | $3^2\ 3p^4\ ^3P_1–3^2\ 3p^3\ 9s\ ^3S_1$ | <4.0 | 1 |
| Al IV (?) | 1237.1860 | $2^2\ 2p^5\ 3p\ ^3D_3–2^2\ 2p^5\ 3d\ ^3F_4$ | 5.0 | 1 |
| N V | 1238.8210 | $2s\ ^2S_{1/2}–2p\ ^2P_{3/2}$ | 5.4 | 1 |
| Fe XII | 1242.0300 | $3s^2\ 3p^3\ ^4S_{3/2}–3s^2\ 3p^3\ ^2P_{3/2}$ | 6.1 | 1 |
| C I | 1242.278 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 24d\ ^1F_3$ | <4.0 | 1 |
| N V | 1242.8060 | $2s\ ^2S_{1/2}–2p\ ^2P_{3/2}$ | 5.4 | 2 |
| N I (2) | 1243.1786 | $2s^2\ 2p^3\ ^2D_{5/2}–2s^2\ 2p^2\ 3s\ ^2D_{5/2}$ | <4.0 | 1 |
| N I | 1243.3058 | $2s^2\ 2p^3\ ^2P_{3/2}–2s^2\ 2p^2\ 12s\ ^2P_{3/2}$ | <4.0 | 1 |
| C I | 1243.518 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 20d\ ^1F_3$ | <4.0 | 1 |
| C I | 1243.7841 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 22d\ ^3F_3$ | <4.0 | 1 |
| C I | 1243.9980 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 19d\ ^1F_3$ | <4.0 | 1 |
| C I | 1244.5350 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 18d\ ^1F_3$ | <4.0 | 1 |
| C I | 1244.9960 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 19d\ ^3F_3$ | <4.0 | 1 |
| C I | 1245.1830 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 17d\ ^1F_3$ | <4.0 | 1 |
| C I | 1245.5380 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 18d\ ^3F_3$ | <4.0 | 1 |
| C I | 1245.9430 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 16d\ ^1F_3$ | <4.0 | 1 |
| C I | 1246.1801 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 17d\ ^3F_3$ | <4.0 | 1 |
| C I | 1246.8621 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 15d\ ^1F_3$ | <4.0 | 1 |
| S I | 1247.1600 | $3s^2\ 3p^4\ ^3P_2–3s^2\ 3p^3\ 6d\ ^3D_3$ | <4.0 | 1 |
| C III | 1247.3831 | $2s\ 2p\ ^1P_1–2p^2\ ^1S_0$ | 4.9 | 1 |
| C I | 1247.8669 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 15d\ ^3F_3$ | <4.0 | 1 |
| C I | 1248.0090 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 14d\ ^1F_3$ | <4.0 | 1 |
| C I | 1249.0040 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 14d\ ^3F_3$ | <4.0 | 1 |
| C I | 1249.4050 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 13d\ ^1F_3$ | <4.0 | 1 |
| Mg X/2 | 624.9430 | $1s^2\ 2s\ ^2S_{1/2}–1s^2\ 2p\ ^2P_{1/2}$ | 6.0 | 1 |
| C I | 1250.423 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 13d\ ^3F_3$ | <4.0 | 1 |
| S II | 1250.5 | $3s^2\ 3p^3\ ^4S_{3/2}–3s\ 3p^4\ ^4P_{1/2}$ | 4.5 | 1 |
| S I (*) | 1250.814 | $3s^2\ 3p^4\ ^3P_0–3s^2\ 3p^3\ 8s\ ^3S_1$ | <4.0 | 1 |
| Si II | 1251.164 | $3s\ 3p^2\ ^4P_{5/2}–3p^3\ ^4S_{3/2}$ | <4.0 | 1 |
| Si V (*) | 1251.39 | $2s^2\ 2p^5\ 3s\ ^3P_2–2s^2\ 2p^5\ 3p\ ^3D_3$ | 5.5 | 2 |
| C I | 1252.208 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 12d\ ^3F_3$ | <4.0 | 1 |
| C I | 1253.4670 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 11d\ ^1F_3$ | <4.0 | 1 |
| S II | 1253.7900 | $3s^2\ 3p^3\ ^4S_{3/2}–3s\ 3p^4\ ^4P_{3/2}$ | 4.5 | 1 |
| C I | 1254.5129 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 11d\ ^3F_3$ | <4.0 | 1 |
| Si I | 1255.2760 | $3s^2\ 3p^2\ ^3P_0–3s\ 3p^3\ ^3S_0$ | <4.0 | 1 |
| Si I | 1256.0930 | $3s^2\ 3p^4\ ^3P_0–3s^2\ 3p^3\ 6d\ ^3D_1$ | <4.0 | 1 |
| C I | 1256.4980 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 10d\ ^1F_3$ | <4.0 | 1 |
| C I | 1257.5649 | $2s^2\ 2p^2\ ^1D_2–2s^2\ 2p\ 10d\ ^3F_3$ | <4.0 | 1 |
| Si I | 1258.7950 | $3s^2\ 3p^2\ ^3P_2–3s\ 3p^3\ ^3S_1$ | <4.0 | 1 |
| S II | 1259.58 | $3s^2\ 3p^2\ ^4S_{3/2}–3s\ 3p^4\ ^4P_{5/2}$ | 4.5 | 2 |