VILSPA PUBLICATIONS LIST

IN MAIN JOURNALS

Published 1 May - 30 Aug 1985

This list contains all Vilspa papers that have appeared betweeen the above dates in major refereed journals (Mon. Not. R. astr. Soc., Astron. Astrophys., Astrophys. J.) and which originate from Europe. While the origin of the data is the main criterion for inclusion in this list, the affiliation of the authors is also taken into consideration. Underlining of an author's name indicates membership of the Vilspa Observatory staff, and papers by Observatory staff on topics not involving IUE data are marked by '(Obs)' after the entry.

We remind users that, in any publications resulting from IUE data, whether it be from their own allocated shifts or data released from the Archive, they should acknowledge the use of the IUE Satellite and the Agency - ESA, NASA or SERC as appropriate, in a footnote on the title page. The following are examples of some of the possibilities.

Based on observations by the International Ultraviolet Explorer, collected at Villafranca Satellite Tracking Station of the European Space Agency. (In the case of one's own observations).

Based on data from the International Ultraviolet Explorer, de-archived from the Villafranca Data Archive of the European Space Agency. (In the case of archive data).

EDITOR'S NOTE

Due to problems of supply of Astrophysical Journal we have been unable to include IUE publications from this journal in the present issue of the IUE Newsletter. We hope to be able to publish the backlog in our next issue.

Carroll, T.J.
A gravitional origin for the broad emission line profiles in quasars and Seyfert galaxies: time variation
Mon. Not. R. astr. Soc., 214, 321-326, 1985

Williams, P.M., Longmore, A.J., van der Hucht, K.A., Talavera, A., Wamsteker, W., Abbott, D.C., Telesco, C.M.
Condensation of dust around the WC7 star HD 192641 (WR 137)
Mon. Not. R. astr. Soc.,215, 23p-29p, 1985

Bromage, G.E., Boksenberg, A., Clavel, J., Elvius, A., Penston, M.V., Perola, G.C., Pettini, M., Snijders, M.A.J., Tanzi, E.G., Ulrich, M.H.
Detailed observations of NGC 4151 with IUE - IV. Absorption line spectrum and variability
Mon. Not. R. astr. Soc., 215, 1-36, 1985

McLachlan, A., Nandy, K.
Shock-heated gas in the I Per OB association
Mon. Not. R. astr. Soc., 215, 473-480, 1985

Rucinski, S.M.
The Mg II emission in W UMa-type binaries
Mon. Not. R. astr. Soc., 215, 615-638, 1985

Rucinski, S.M.
IUE observations of HD 36705
Mon. Not. R. astr. Soc., 215, 591-614, 1985

Smith, L.J., Lloyd, C., Walker, E.N.
UV and optical observations of variability in the WR + compact candidate HD 96548
Astron. Astrophys., 146, 307-316, 1985

Bergvall, N.
Star formation and chemical abundances in the blue compact galaxy ESO 338-IG04
Astron. Astrophys., 146, 269-281, 1985

Bianchi, L., Pakull, M.
The first IUE observations of LMC X-1 (star 32)
Astron. Astrophys., 146, 242-248, 1985

Querci, M., Querci, F.
Temporal variations in UV spectra of the red giant C star, TW Hor
Astron. Astrophys., 147, 121-126, 1985

Schroder, K.P.
A study of ultraviolet spectra of ζ Aurigae/VV Cephei systems VII. Chromospheric density distribution and wind acceleration region
Astron. Astrophys., 147, 103-110, 1985

Augarde, R., Lequeux J.
Peculiar motions and star formation in the interacting galaxy complex Mk 171=NGC 3690 + IC 694
Astron. Astrophys. 147, 273-280, 1985

Franco, M.L., Magazzu, A., Stalio, R.
Interstellar reddening law towards the nucleus of h Per
Astron. Astrophys., 147, 191-196, 1985

Blomme, R., Hensberge, H.
The outer layers of the Beta Cephei stars BW Vul and Sigma Sco
Astron. Astrophys., 148, 97-104, 1985

Koester, D., Vauclair, G., Dolez, N., Oke, J.B., Greenstein, J.L., Weidemann, V.
Atmospheric parameters of the variable DB white dwarf GD 358
Astron. Astrophys., 149, 423-428, 1985

Bouchet, P., Lequeux, J., Maurice, E., Prevot, L., Prevot-Burnichon, M.L.
The visible and infrared extinction law and the gas-to-dust ratio in the Small Magellanic Cloud
Astron. Astrophys., 149, 330-336, 1985

II. DATA REDUCTION

a) Correction of Systematic Errors

The IUE spectra were all extracted by the image processing system that was in routine use between July of 1978 and May of 1979. Certain errors were present in those early extractions, as reviewed by Turnrose, Thompson, and Gass (1984). The following corrections were made to the extracted spectra:

1. All wavelength assignments were corrected to the mean small aperture dispersion constants of Turnrose, Bohlin, and Harvel (1979) with the displacements for the large aperture given by Turnrose *et al.* (1979). The correction procedure is specified by Harvel, Turnrose, and Bohlin (1979).

2. The correction algorithm that was adopted by the three IUE agencies was applied to remedy the original error in the intensity transfer function (ITF) for the SWP camera (Holm *et al.* 1982). Any data that might have been processed using an even earlier, preliminary ITF was reprocessed to this uniform, known basis. The purpose of the ITF is to linearize the IUE response in converting data numbers (DN) to flux numbers (FN) and to reduce the spectra to a uniform flat field.

3. All spectra were corrected to the mean camera head temperatures of 8C for SWP and 12C for LWR by using the changes in camera sensitivity with temperature of $-0.5\%\ C^{-1}$ for SWP and $-1.1\%\ C^{-1}$ for LWR (Schiffer 1982). Mean temperatures for all of the spectra discussed here are within 0.5C of the overall means, so that the total effect of the temperature correction on the fluxes in Table 2 is less than 0.5%.

4. The large aperture exposure times were corrected for the high voltage rise time of 0.12 s (Schiffer 1980) after truncating the specified exposure time to an integral multiple of 0.4096 s. Corrections to the small aperture

exposure times are irrelevant, since the small aperture data is normalized to the large aperture. The primary effect of the 0.12 s correction is an increase in the HD 93521 fluxes of 4% with respect to the faintest stars. Bohlin and Holm did not make a high voltage rise time correction in deriving the May 1980 calibration, since the effect was not appreciated at the time. If 0.12 s had been subtracted from the exposure times originally, the inverse sensitivity of May 1980 and all fluxes based on the IUE scale would be only 1% lower.

5. The small aperture spectra were corrected to be of the same relative response as the large aperture by using the smooth correction factors discussed in detail by Holm and Bohlin (1986). The data specified in Table 1 in conjunction with a comparable set of IUE observations taken in 1981 were used to define the small to large aperture ratios (S/L), which are normalized to an average value of unity. The smoothed S/L corrections are typically within 5% of unity for the SWP camera and for LWR below 3100 Å, but S/L falls to 0.7 at 3200 Å. The S/L ratios for the 1978-9 data and for the 1981 data differ by less than the RMS scatter of the two separate determinations, indicating that S/L is largely time independent. Statistically significant structure at the few percent level is present in the unsmoothed S/L with a correlation length of several resolution elements, despite the fact that the IUE production data processing is designed to reduce all spectra to a common flat field. The systematic and largest deviations of S/L from unity longward of 3100 Å may be attributable to a flat field correction at this extreme of the CsTe cathode sensitivity that differs from the flat field in the ITF correction, which is based on 2537 Å light from a mercury penray lamp. Possible explanations for the fine structure in the unsmoothed S/L include: 1) the noise in the ITF is systematically impressed on each reduced spectrum

and becomes evident in the high signal-to-noise results of this work and 2) the cameras had not stabilized to the normal guest observer mode when the ITF was obtained in the early commissioning period of IUE.

b) Procedures

In addition to the correction of individual spectra for the above effects, the steps outlined below were followed to create the mean spectrum for each star in Table 2.

1. After the SWP ITF correction, the net spectrum was computed from the gross by subtracting a background that had a 31 point median filter applied and was smoothed twice by averaging over 15 points. The LWR net was created by the production processing system.

2. The effective exposure times for small aperture spectra were computed by normalizing to the mean of the large aperture spectra in the interval 1600 to 1725 Å for SWP and 2500 to 2700 Å for LWR.

3. The sum of the calibrated net spectra ΣA were accumulated in 5 Å bins, while the sum of the exposure times Σt, or effective exposure times for the small aperture, were accumulated for the same bins.

4. If any point was flagged as a reseaux or other contaminant, no contribution was made to either ΣA or Σt. The effect of this procedure is that the net flux at positions of large aperture reseaux are defined entirely by small aperture data, and visa versa. The reduced number of spectra used to define the standard flux in Table 2 is reflected in the reduced number of points under NO. in the table.

5. The root-mean-square scatter of all spectra within each bin is listed in percent under SIGMA in Table 2, while the average scatter is summarized in Table 1. The rms scatter is only 5% for bins at wavelengths as short as

1200 Å. However, the scatter increases dramatically in the region of the strong Lyα line. The causes for this increased uncertainty are: 1) the rapid change in flux over the 5 Å bins makes the average flux in any spectrum very sensitive to small wavelength errors and 2) the lower signal in the line results in larger statistical uncertainty. In addition, variable geocoronal Lyα may contribute, especially for the faintest star BD+33°2642, where the rms scatter rises to 39% at 1215 Å.

6. The absolute flux is $F = \Sigma A/\Sigma t$. The units of this FLUX in Table 2 are erg cm^{-2} s^{-1} $\mathrm{Å}^{-1}$. The wavelengths (LAMBDA) are in Å.

c) Quality Control

The following were considered in an effort to have the highest quality set of uniform data for the IUE standards.

1. Spectra with data near saturation were avoided, since exposure times were calculated to keep the response below the level where errors could occur due to truncations or extrapolations in the ITF. The process of extrapolation does not introduce additional errors (Holm 1981), but extrapolated points are often near saturation where non-linearity errors are worse.

2. All spectra with pronounced microphonics noise were excluded.

3. All images with telemetry dropouts were excluded.

d) Uncorrected Errors

Certain known errors that have not been corrected are still associated with the spectra of the UV flux standards.

1. The mean epoch of the original IUE calibration represented by the fluxes of Table 2 is 1978.8. By assuming that the fluxes of Table 2 reflect the IUE sensitivity as of 1978.8, any error is less than 1% due to differential sensitivity change over the April 1978 to April 1979 calibration period.

2. IUE exposure times for point source spectra are uncertain by 30 ms due to questions about when the on-board computer turns the high voltage on and off. For the brightest star in the UV, HD 93521, exposure times were as short as 2.75 s in the large aperture. A 30 ms error would make any individual spectrum of HD 93521 uncertain by 1%. However, the fluxes of Table 2 are based on the large aperture level set by 15 SWP and 13 LWR spectra, which are expected to reduce the 1% by the square root of the number of independent observations. Further evidence to substantiate the full validity of HD 93521 as a standard are the values for the mean scatter in the 5 Å bins (see Table 1), which are typical of the values for the other stars.

3. The well known non-linearity problems of IUE (eg. Oliversen 1983) may be the dominant source of error in the relative fluxes of the five standards. Since all spectra were exposed to similar levels at one wavelength, since all spectra have a background that is small compared to the net signal, and since all stars are hot and unreddened, linearity errors are minimized. However, residual non-linearity due to remaining differences in the actual exposure levels and in the slope of the flux distributions as a function of wavelength may be the dominant uncertainty among the relative flux levels of the standards. One measure of the internal accuracy of the standards is to compare the TD-1 fluxes of Jamar et al. (1976) with those in Table 2. This comparison was done in the process of the original calibration, which showed a typical scatter of 3% about the mean. However, BD+28°4211 has

both the largest scatter of up to 7% about the mean calibration curve and also the most deviant flux distribution. This largest systematic deviation from the mean comparison with TD-1 as a function of wavelength is indicative of a linearity error for this case of the most extreme shape of the IUE response.

III. THE NEW IUE ABSOLUTE CALIBRATION

When the small aperture spectra are corrected to the shape of the large aperture point source spectra, normalized to the large aperture, and combined to get the proper net spectrum ΣA, the resulting stellar fluxes are <u>not</u> the same as those that had been derived under the original assumption that the small aperture response is gray. Assuming that the original fluxes from the point source observations of the 5 program stars were correctly derived from the OAO-2 and TD-1 reference standards, the average ratio of the proper net spectra to the original net spectra define the changes needed to the large aperture point source calibration. Since the S/L corrections are smoothed on the same 25 Å scale for SWP and 50 Å scale for LWR that was used to derive the original absolute calibration and since the changes in ΣA are smooth, these corrections to the absolute calibration in Tables 3 and 4 are also smooth. The smooth S/L and new absolute large aperture point source calibrations that together maintain the same mean fluxes for the 5 well observed IUE flux standards are given in Tables 3 and 4 for SWP and LWR, repectively. Also included in the tables are the smooth T/L corrections for trailed spectra in the large aperture, which was derived using the same techniques as for S/L (see Holm and Bohlin 1986 for details.) The change in the IUE absolute calibration as applied to point sources in the large aperture is typically less than 5% below 3100 Å, but rises to 10% at 3200 Å.

The fluxes for the 5 standard stars in Table 2 are based on the new point source absolute calibration and the S/L correction for those small aperture spectra that are included in the average for each star. See a preliminary version of this paper by Bohlin (1985) for the journal of observations. Although the mean fluxes for the 5 stars as a group do not change, individual stars do show differences of a few percent, depending on the degree to which small aperture signal is used to define the net flux. For example, the relative flux at 3200 Å between BD+33°2642 and BD+28°4211 changes by about 5%. Since the 5 standards are used by the IUE project to monitor sensitivity changes, their fluxes in Table 2 for the first year epoch of IUE will be important for setting the precise absolute scale throughout the IUE lifetime and, therefore, will define the fluxes of the UV standards for the Hubble Space Telescope.

As a final check on this recalibration of IUE, the absolute fluxes were re-derived for the stars with OAO-2 and TD-1 fluxes that were originally used by Bohlin and Holm (1980) to calibrate IUE. See Bohlin and Holm (1984) for the list of stars. These new fluxes from IUE spectra that included some trailed observations were compared afresh to the OAO-2 and TD-1 reference fluxes. The IUE fluxes based on the corrections of Tables 3 and 4 agree with the original reference spectra to within 3%, which is a small error compared with the 10% uncertainty in the reference standards that are the basis of the IUE calibration. Therefore, the new IUE calibration in Tables 3 and 4 accounts only for the inadequacies in the original calibration techniques; no new transfer of OAO-2 or TD-1 flux scales to IUE has been done.

IV. COMPARISON OF IUE FLUXES WITH GROUND BASED OBSERVATIONS

Since IUE lacks sensitivity longward of 3200 Å and since ground-based spectrophotometry is problematic below 3300 Å, quantitative comparisons require a model that can be fit to one data set in order to predict fluxes at the wavelengths of the other data set. Figures 1 and 2 show the IUE fluxes from Table 2 along with the data of Stone (1977) for BD+28°4211 and BD+33°2642, respectively. The magnitudes per unit frequency interval $m(\nu)$ from Stone were converted to flux per unit frequency interval $F(\nu)$ by

$$2.5 \log F(\nu) = -48.60 - m(\nu);$$

and then $F(\nu)$ was converted to $F(\lambda)$ for comparison with IUE. The model fit is constrained to pass through the data averaged in a 100 Å bandpass centered at 3050 Å. Beyond 3100 Å, the scatter in the IUE flux values begins to increase. A sophisticated model is not needed, since the model is used only to predict the shape of the continuum over the short interval from 3050 Å to the data point of Stone at 3571 Å, where there should be no contamination from light longward of the Balmer limit. One choice of models is the Plank blackbody function that passes through the IUE continuum in the 1200 to 1400 Å region and also through the 3050 Å point. The blackbody functions shown in Figures 1 and 2 that satisfy these constraints are for temperatures of 120,100 and 26,400 K for BD+28°4211 and BD+33°2642, respectively. The mean ratio of the 6 Stone measurements between 3300 Å and 3571 Å to the model fit to the IUE data is 0.983 with an rms scatter of 0.009 for BD+28°4211 and 1.011±0.014 for BD+33°2642. The Stone values at 3200 and 3250 are discrepant and are not considered, since Stone says that the correction of −0.011 mag he used to place his calibration in the Balmer continuum on the Hayes and Latham (1975) scale for Vega "... has (admittedly rather arbitrarily) been extrapolated to the two extreme ultraviolet points at λ3200 and λ3250."

Another possibility for modeling the slope of the Balmer continuum from 3050 to 3571 Å is to use model atmosphere computations. In the case of BD+28°4211, the log g = 6, LTE pure helium models of Wesemael (1981) differ in the ratio F(3571)/F(3050) from a blackbody of the same temperature by less than 1% in the 100,000 to 150,000 K range. In the case of BD+33°2642, there is a Balmer jump, so that the pure hydrogen, LTE models of Wesemael et al. (1980) with hydrogen line blanketing seem more appropriate. For log g = 6.0 a temperature of 20,500 K is deduced from the measured flux ratio between 3050 and 5556 Å. The model for 20,500 is interpolated from the Wesemael et al. (1980) models computed for 20,000 and 30,000 K. The ratio of the Stone fluxes to this model for BD+33°2642 is 1.006±0.012. Despite the consistency of all the models considered over the narrow 3050 to 3571 Å range, the fits of these models to the IUE fluxes are quite bad at other wavelengths. For example at 1900 Å, the blackbody lies above BD+28°4211 by 12% and above BD+33°2642 by 35%. The 20,500 K line blanketed model atmosphere is even higher than the 26,400 K blackbody in the IUE wavelength range when both models are normalized at 3050 Å.

In summary, the IUE data for two of the standard stars agrees with ground based data to within 2%. This conclusion is independent of the model used to make the comparisons. Even if the small interstellar extinction corrections that are allowed by the data are introduced, the conclusion is unaffected.

V. COMPARISON OF IUE FLUXES WITH VOYAGER OBSERVATIONS

The Voyager spectrophotometry of Holberg *et al*. (1982) overlaps the IUE data at the shortest wavelengths, as shown for BD+28°4211 in Figure 3 and for BD+75°325 in Figure 4 (Holberg 1985). While all 4 Voyager data points between 1150 and 1200 Å for BD+28°4211 agree with IUE within the one sigma Voyager statistical uncertainty, the Voyager points for BD+75°325 lie systematically above the IUE data by about 15%. This minor discrepancy is unexpected, since Voyager is calibrated to the IUE scale in the region of overlap. The small statistical error bars for BD+28°4211 are independently verified by the quantitative agreement between the weak low dispersion features near 1340 and 1370 Å in Figure 3 and the same features identified in high dispersion by Schönberner and Drilling (1985) and Dean and Bruhweiler (1985).

Despite the small disagreement between IUE and Voyager for BD+75°325, the Voyager spectrophotometry is probably the most homogeneous data available for calibrating the High Resolution Spectrograph on HST from 1050 to 1150 Å. Holberg *et al*. (1985) and references therein suggest that the agreement between most Voyager data and IUE is similar to the case of BD+28°4211 in Figure 3. Independent absolute flux measurements by Woods, Feldman, and Bruner (1985) agree well with Voyager fluxes between 1050 and 1150 Å, but the two sets of data do show ±20% variation in their ratios over the same wavelength range. A moderately conservative conclusion is that Voyager data have a photometric uncertainty of about 15% for relative fluxes of stars in the region 1050 to 1150 Å, unless comprehensive evidence is presented to the contrary. However, see Polidan, Carone, and Campbell (1985).

VI. FUTURE UV CALIBRATIONS

Despite the several possible errors at the 1% level outlined here and despite the potential improvements to the original transfer of the chosen fluxes for η UMa to IUE as detailed in Bohlin and Holm (1984), my recommendation is to base all future UV calibrations on the fluxes of the 5 fundamental standards of Table 2. The overall error in the transfer of the absolute flux scale to IUE is still less than the nominal 10% uncertainty in the η UMa fluxes quoted by Bohlin *et al*. (1980).

Specifically, the five IUE standards should be the basis for calibration of the LWP camera, for any recalibrations of the SWP and LWR cameras, and for the UV calibration of the Hubble Space Telescope (HST) instruments. The IUE observing program that provided the bulk of a larger grid of standards for HST tied these new secondary standards directly to the primary set by observing at least two of the five during each observing run.

New observations by instruments precisely calibrated with respect to the National Bureau of Standards absolute scale are needed. Preference for new observations should be given to the five standards of Table 2. If these stars are too faint, η UMa is the best bright star, because Bohlin *et al*. (1980) based the IUE calibration on the choice of flux for this star and because OAO-2 observation showed no UV variability (Holm 1985). Even though exposure times are uncertain when η UMa is rapidly trailed through the IUE slit, the shape of the IUE flux distribution can be directly compared with new fundamental observations.

An independent technique for studying the IUE calibration error is to compare unreddened sources with physical predictions of their flux distribution, as normalized at V = 5480 Å. Especially useful for this purpose are stars with few features, such as hot white dwarfs or main sequence stars near spectral type B3. If enough different physical theories all predict the same error for the IUE absolute fluxes, this correction could be justified and would have the virtue of not only eliminating the 10% uncertainty in the chosen flux for η UMa, but also of removing the 2 to 4% transfer uncertainty.

Drs. A. V. Holm and J. Koornneef provided valuable constructive criticisms that have been incorporated into this paper. I thank the staff at the Goddard Space Flight Center, who made the data available and are always ready to cheerfully discuss any technical detail of IUE data.

TABLE 1

OBSERVATIONS OF PROGRAM STARS BETWEEN APRIL 1978 AND APRIL 1979

							No. of SWP Spectra		σ(SWP)[b]	No. of LWR Spectra		σ(LWR)[b]
Star	R.A.(1950)	Dec(1950)	S.T.	V	B-V	Ref.	P[a]	S[a]	(%)	P[a]	S[a]	(%)
HD60753	$7^h\ 32^m\ 08^s.1$	-50° 28' 29"	B3IV	6.69	-0.09	1	6	5	3.9	5	4	6.1
BD+75°325	8 04 43.2	+75 06 48	O5p	9.54	-0.37	2,4	7	6	4.1	7	6	6.2
HD 93521	10 45 33.6	+37 50 04	O9Vp	7.04	-0.28	3	15	13	4.9	13	13	6.9
BD+33°2642	15 50 01.9	+33 05 28	B2IV	10.83	-0.16	4	8	4	5.1	7	4	7.4
BD+28°4211	21 48 57.4	+28 37 34	Op	10.54	-0.34	2,4	12	12	5.4	7	6	6.7

[a] P - Point source in large aperture. S - Source in small aperture.

[b] Mean standard deviation, one sigma, of all 5 Å bins of Table 2 in percent.

References: 1. Jamar et al. (1976) 2. Goy (1973) 3. Guetter (1974) 4. Jaschek et al. (1972).

TABLE 2

HD60753

SWP

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1155	9.41E-11	6.1	11	1360	9.78E-11	3.2	11	1565	6.63E-11	2.4	11	1770	5.90E-11	4.7	11
1160	1.01E-10	5.6	11	1365	9.34E-11	3.5	11	1570	6.82E-11	5.9	11	1775	5.74E-11	4.4	11
1165	9.95E-11	6.2	11	1370	9.45E-11	3.1	11	1575	6.84E-11	6.2	7	1780	5.89E-11	2.7	5
1170	9.33E-11	5.4	11	1375	9.24E-11	3.8	11	1580	6.66E-11	5.5	6	1785	5.87E-11	1.5	5
1175	7.45E-11	5.7	11	1380	9.10E-11	3.8	11	1585	7.03E-11	5.5	6	1790	5.82E-11	3.9	5
1180	8.98E-11	7.0	8	1385	9.20E-11	3.8	11	1590	6.97E-11	5.1	6	1795	6.16E-11	3.3	5
1185	9.79E-11	3.5	5	1390	8.64E-11	2.2	11	1595	6.79E-11	4.5	6	1800	6.12E-11	3.1	8
1190	8.81E-11	4.9	5	1395	7.96E-11	2.5	11	1600	6.64E-11	3.4	11	1805	5.97E-11	2.8	11
1195	7.43E-11	4.4	5	1400	8.47E-11	3.2	11	1605	6.40E-11	3.3	11	1810	5.77E-11	3.6	11
1200	5.95E-11	5.5	5	1405	8.39E-11	2.9	11	1610	6.23E-11	2.3	11	1815	5.75E-11	3.9	11
1205	5.79E-11	5.2	11	1410	8.40E-11	4.8	11	1615	6.37E-11	2.8	11	1820	5.73E-11	3.4	11
1210	5.46E-12	11.4	11	1415	8.24E-11	4.8	11	1620	6.37E-11	3.9	11	1825	5.70E-11	3.2	11
1215	4.67E-12	24.7	11	1420	8.42E-11	2.7	11	1625	6.25E-11	3.9	11	1830	5.60E-11	3.0	11
1220	1.70E-11	20.2	11	1425	8.70E-11	3.0	11	1630	6.29E-11	3.9	11	1835	5.49E-11	3.0	11
1225	4.70E-11	10.1	11	1430	8.85E-11	2.9	11	1635	6.21E-11	4.0	11	1840	5.30E-11	3.2	11
1230	7.17E-11	7.5	11	1435	8.57E-11	2.4	11	1640	6.37E-11	3.0	11	1845	5.14E-11	3.5	11
1235	9.10E-11	6.3	11	1440	8.66E-11	2.4	11	1645	6.50E-11	3.6	11	1850	4.94E-11	3.4	11
1240	1.06E-10	5.4	11	1445	9.02E-11	2.7	10	1650	6.18E-11	3.9	6	1855	4.60E-11	3.8	11
1245	1.07E-10	3.1	11	1450	9.01E-11	1.9	6	1655	6.20E-11	2.9	5	1860	4.76E-11	3.6	11
1250	1.04E-10	3.1	11	1455	8.86E-11	2.1	6	1660	6.02E-11	5.3	5	1865	4.86E-11	3.8	11
1255	1.08E-10	4.2	11	1460	8.74E-11	2.8	6	1665	6.12E-11	5.2	7	1870	5.12E-11	3.2	11
1260	9.51E-11	4.2	11	1465	8.64E-11	4.0	10	1670	6.22E-11	5.3	11	1875	5.17E-11	3.6	11
1265	9.70E-11	3.8	11	1470	8.54E-11	3.8	11	1675	5.91E-11	5.5	11	1880	4.96E-11	3.6	11
1270	1.11E-10	2.8	11	1475	8.45E-11	2.7	11	1680	6.28E-11	4.7	11	1885	4.65E-11	3.7	11
1275	1.08E-10	3.1	11	1480	8.76E-11	2.8	11	1685	6.37E-11	4.9	11	1890	4.50E-11	3.1	11
1280	1.12E-10	4.4	11	1485	8.41E-11	3.4	11	1690	6.46E-11	4.8	11	1895	4.47E-11	3.1	11
1285	1.11E-10	4.0	11	1490	8.80E-11	2.2	11	1695	6.35E-11	4.4	11	1900	4.56E-11	3.7	11
1290	1.02E-10	3.2	11	1495	8.54E-11	3.9	11	1700	6.25E-11	4.5	11	1905	4.48E-11	3.5	11
1295	8.65E-11	4.8	11	1500	8.17E-11	2.7	11	1705	6.04E-11	5.3	11	1910	4.57E-11	3.3	11
1300	7.29E-11	4.9	11	1505	8.01E-11	2.5	11	1710	5.77E-11	5.9	11	1915	4.36E-11	3.7	7
1305	7.39E-11	3.4	11	1510	7.67E-11	2.9	11	1715	5.65E-11	2.4	11	1920	4.38E-11	3.0	5
1310	8.99E-11	3.0	11	1515	7.44E-11	5.2	11	1720	5.51E-11	2.4	11	1925	4.51E-11	3.4	5
1315	1.12E-10	4.6	11	1520	7.69E-11	5.9	11	1725	5.44E-11	2.9	11	1930	4.19E-11	2.8	5
1320	1.12E-10	3.1	10	1525	7.55E-11	2.4	11	1730	6.08E-11	4.5	11	1935	4.36E-11	2.0	5
1325	1.04E-10	2.4	10	1530	7.16E-11	2.6	11	1735	6.09E-11	3.4	11	1940	4.39E-11	2.9	11
1330	9.59E-11	4.0	11	1535	7.03E-11	2.4	11	1740	6.05E-11	3.5	11	1945	4.54E-11	3.0	11
1335	8.04E-11	3.3	11	1540	6.90E-11	3.4	11	1745	6.04E-11	3.9	11	1950	4.44E-11	3.1	11
1340	1.00E-10	3.5	11	1545	7.00E-11	4.3	11	1750	5.86E-11	3.5	11	1955	4.35E-11	3.1	11
1345	1.02E-10	6.1	11	1550	6.68E-11	2.6	11	1755	6.04E-11	4.7	11	1960	4.38E-11	3.0	11
1350	1.00E-10	5.5	11	1555	7.10E-11	6.4	11	1760	5.94E-11	4.0	11	1965	4.42E-11	3.8	11
1355	1.01E-10	3.2	11	1560	6.80E-11	3.2	11	1765	5.90E-11	4.1	11	1970	4.56E-11	4.3	11

LWR

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1900	4.39E-11	14.8	9	2225	3.41E-11	9.1	9	2550	3.08E-11	4.9	9	2875	2.41E-11	5.4	9
1905	4.63E-11	11.2	9	2230	3.38E-11	6.8	9	2555	2.97E-11	5.0	9	2880	2.51E-11	5.0	8
1910	4.81E-11	12.8	9	2235	3.20E-11	5.9	9	2560	2.89E-11	4.3	9	2885	2.45E-11	3.9	5
1915	4.30E-11	14.9	9	2240	3.14E-11	6.0	9	2565	3.03E-11	2.1	7	2890	2.47E-11	3.4	5
1920	4.32E-11	11.0	9	2245	3.23E-11	6.5	9	2570	3.04E-11	1.9	4	2895	2.55E-11	4.3	5
1925	4.65E-11	8.0	9	2250	3.28E-11	8.8	9	2575	2.97E-11	2.2	4	2900	2.50E-11	4.5	5
1930	5.04E-11	11.6	9	2255	3.48E-11	7.0	9	2580	2.98E-11	2.7	4	2905	2.36E-11	5.1	5
1935	4.83E-11	7.9	9	2260	3.56E-11	5.8	9	2585	2.99E-11	4.0	4	2910	2.39E-11	4.3	5
1940	4.73E-11	5.7	9	2265	3.44E-11	4.8	9	2590	2.82E-11	5.4	4	2915	2.40E-11	4.1	5
1945	4.62E-11	9.7	9	2270	3.40E-11	6.3	9	2595	2.70E-11	4.3	4	2920	2.39E-11	5.1	7
1950	4.58E-11	8.7	9	2275	3.53E-11	6.5	9	2600	2.83E-11	2.4	4	2925	2.35E-11	5.2	9
1955	4.34E-11	6.9	6	2280	3.64E-11	6.6	9	2605	2.95E-11	2.5	7	2930	2.41E-11	3.4	9
1960	4.18E-11	5.2	6	2285	3.43E-11	4.8	9	2610	3.02E-11	4.4	9	2935	2.45E-11	3.8	9
1965	3.96E-11	6.7	6	2290	3.40E-11	3.3	9	2615	2.98E-11	2.0	9	2940	2.39E-11	3.8	9
1970	4.29E-11	3.8	6	2295	3.32E-11	5.5	9	2620	2.96E-11	2.4	9	2945	2.31E-11	4.2	9
1975	4.84E-11	5.5	6	2300	3.32E-11	7.3	9	2625	2.94E-11	2.1	9	2950	2.25E-11	7.1	9
1980	4.71E-11	7.8	9	2305	3.51E-11	6.7	9	2630	2.85E-11	1.6	9	2955	2.24E-11	4.0	9
1985	4.56E-11	9.7	9	2310	3.49E-11	7.3	9	2635	2.96E-11	3.8	9	2960	2.52E-11	3.0	9
1990	4.47E-11	4.7	9	2315	3.33E-11	6.7	9	2640	2.94E-11	4.0	9	2965	2.29E-11	4.2	9
1995	4.40E-11	7.3	9	2320	3.32E-11	6.7	9	2645	2.92E-11	5.1	9	2970	2.25E-11	6.3	9
2000	4.25E-11	6.0	9	2325	3.55E-11	4.6	9	2650	2.94E-11	4.9	9	2975	2.31E-11	6.8	9
2005	4.40E-11	6.5	9	2330	3.57E-11	5.6	9	2655	3.04E-11	5.9	9	2980	2.30E-11	7.6	9
2010	4.48E-11	4.4	9	2335	3.35E-11	5.6	9	2660	2.98E-11	5.5	9	2985	2.27E-11	4.3	9
2015	4.33E-11	4.6	9	2340	3.26E-11	4.8	9	2665	2.92E-11	5.9	9	2990	2.34E-11	4.8	9
2020	4.47E-11	5.6	9	2345	3.30E-11	4.8	9	2670	2.88E-11	7.1	9	2995	2.27E-11	3.7	9
2025	4.57E-11	5.7	9	2350	3.39E-11	4.7	9	2675	2.84E-11	3.7	9	3000	2.22E-11	3.7	9
2030	4.42E-11	4.1	9	2355	3.25E-11	4.8	9	2680	2.93E-11	3.2	6	3005	2.18E-11	4.2	9
2035	4.26E-11	3.7	9	2360	3.42E-11	4.1	9	2685	2.95E-11	5.3	6	3010	2.26E-11	4.3	9
2040	4.16E-11	4.7	9	2365	3.32E-11	4.9	9	2690	2.99E-11	6.0	6	3015	2.18E-11	3.5	9
2045	4.33E-11	5.8	9	2370	3.34E-11	4.8	9	2695	2.76E-11	5.7	6	3020	2.15E-11	4.1	9
2050	4.37E-11	7.5	8	2375	3.30E-11	4.8	9	2700	2.67E-11	4.0	6	3025	2.08E-11	6.9	9
2055	3.96E-11	7.0	7	2380	3.20E-11	6.2	9	2705	2.86E-11	4.2	9	3030	2.10E-11	5.2	9
2060	4.13E-11	5.0	7	2385	3.10E-11	6.3	9	2710	2.75E-11	4.1	9	3035	2.09E-11	5.1	9
2065	4.19E-11	5.1	7	2390	3.25E-11	6.1	9	2715	2.71E-11	3.4	9	3040	2.10E-11	5.5	9
2070	4.01E-11	4.9	7	2395	3.35E-11	5.4	9	2720	2.67E-11	3.4	9	3045	2.10E-11	7.3	9
2075	4.17E-11	4.7	7	2400	3.27E-11	5.4	9	2725	2.65E-11	4.2	9	3050	2.10E-11	7.9	9
2080	4.29E-11	5.1	9	2405	3.17E-11	4.6	9	2730	2.69E-11	2.6	9	3055	2.10E-11	7.1	9
2085	4.07E-11	5.4	9	2410	3.06E-11	10.1	9	2735	2.69E-11	2.4	9	3060	2.05E-11	3.8	9
2090	4.15E-11	5.9	9	2415	3.09E-11	7.2	9	2740	2.62E-11	4.6	9	3065	2.01E-11	5.5	9
2095	3.88E-11	7.9	9	2420	3.14E-11	4.8	9	2745	2.53E-11	5.0	9	3070	2.03E-11	6.0	9
2100	3.70E-11	8.0	9	2425	3.16E-11	4.6	9	2750	2.54E-11	2.9	9	3075	1.94E-11	6.1	9
2105	3.77E-11	11.6	9	2430	3.26E-11	4.7	9	2755	2.60E-11	4.3	9	3080	2.11E-11	9.2	9
2110	4.04E-11	4.1	9	2435	3.15E-11	5.6	9	2760	2.48E-11	3.6	9	3085	2.11E-11	9.7	9
2115	3.85E-11	5.0	9	2440	3.14E-11	5.8	9	2765	2.53E-11	5.0	9	3090	2.02E-11	10.7	9
2120	3.61E-11	4.3	9	2445	3.33E-11	4.1	9	2770	2.54E-11	5.0	9	3095	2.01E-11	8.2	9
2125	3.88E-11	7.0	9	2450	3.28E-11	6.6	9	2775	2.58E-11	3.4	9	3100	2.14E-11	8.7	9
2130	3.73E-11	7.8	9	2455	3.36E-11	3.1	9	2780	2.63E-11	3.2	8	3105	2.14E-11	8.3	9
2135	3.65E-11	6.9	9	2460	3.32E-11	5.9	9	2785	2.56E-11	4.4	8	3110	1.98E-11	7.8	9
2140	3.61E-11	7.2	9	2465	3.22E-11	5.2	9	2790	2.68E-11	3.4	8	3115	1.93E-11	11.8	9
2145	3.77E-11	7.5	7	2470	3.08E-11	4.7	9	2795	2.43E-11	7.6	8	3120	1.83E-11	9.8	9
2150	3.67E-11	6.4	5	2475	2.96E-11	3.7	9	2800	2.31E-11	3.6	8	3125	1.86E-11	9.2	9
2155	3.86E-11	6.8	5	2480	3.05E-11	5.2	9	2805	2.46E-11	4.6	8	3130	1.93E-11	12.4	9
2160	3.58E-11	4.1	5	2485	3.09E-11	6.9	9	2810	2.40E-11	4.2	9	3135	1.92E-11	9.9	9
2165	3.57E-11	4.0	5	2490	2.98E-11	5.6	9	2815	2.61E-11	5.0	9	3140	2.00E-11	10.5	9
2170	3.65E-11	4.6	5	2495	2.92E-11	5.5	9	2820	2.64E-11	5.4	9	3145	1.94E-11	10.4	9
2175	3.73E-11	8.9	5	2500	3.27E-11	7.0	9	2825	2.50E-11	5.5	9	3150	1.97E-11	16.3	9
2180	3.55E-11	6.2	5	2505	3.19E-11	5.3	9	2830	2.38E-11	5.4	9	3155	2.00E-11	16.9	9
2185	3.78E-11	4.4	5	2510	3.03E-11	3.5	9	2835	2.40E-11	5.4	9	3160	1.77E-11	14.3	9
2190	4.27E-11	4.3	6	2515	2.97E-11	4.6	9	2840	2.38E-11	4.9	9	3165	1.65E-11	12.2	9
2195	4.09E-11	20.3	9	2520	2.94E-11	4.7	9	2845	2.46E-11	4.9	9	3170	1.73E-11	12.0	9
2200	3.65E-11	8.0	9	2525	2.89E-11	4.7	9	2850	2.50E-11	4.2	9	3175	1.82E-11	18.9	9
2205	3.30E-11	5.9	9	2530	3.00E-11	3.1	9	2855	2.41E-11	4.8	9	3180	1.82E-11	20.5	9
2210	3.38E-11	5.4	9	2535	3.00E-11	4.9	9	2860	2.51E-11	4.1	9	3185	2.01E-11	18.7	9
2215	3.40E-11	4.7	9	2540	2.93E-11	3.9	9	2865	2.49E-11	4.1	9	3190	2.16E-11	24.2	9
2220	3.32E-11	6.6	9	2545	2.97E-11	5.0	9	2870	2.42E-11	5.2	9	3195	1.85E-11	21.1	9

TABLE 2 - *Continued*

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	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
SWP	1155	1.02E-10	8.0	13	1360	5.48E-11	3.9	13	1565	3.71E-11	3.0	13	1770	2.80E-11	4.7	13
	1160	1.04E-10	6.3	13	1365	5.53E-11	3.1	13	1570	3.65E-11	3.5	13	1775	2.80E-11	3.1	13
	1165	9.91E-11	6.0	13	1370	5.50E-11	3.8	13	1575	3.77E-11	3.1	12	1780	2.77E-11	4.0	6
	1170	9.41E-11	4.7	13	1375	5.51E-11	3.5	13	1580	3.70E-11	3.7	7	1785	2.72E-11	2.8	6
	1175	8.71E-11	6.8	13	1380	5.64E-11	3.5	13	1585	3.64E-11	3.6	7	1790	2.66E-11	4.0	6
	1180	9.28E-11	5.8	10	1385	5.38E-11	3.4	13	1590	3.61E-11	3.0	7	1795	2.72E-11	3.0	6
	1185	9.18E-11	5.9	6	1390	5.30E-11	4.1	13	1595	3.49E-11	4.6	7	1800	2.64E-11	3.5	13
	1190	8.80E-11	4.1	6	1395	5.20E-11	4.3	13	1600	3.49E-11	5.1	13	1805	2.60E-11	3.3	13
	1195	7.80E-11	5.0	6	1400	5.25E-11	4.0	13	1605	3.34E-11	5.1	13	1810	2.60E-11	3.7	13
	1200	7.65E-11	5.1	6	1405	4.96E-11	4.0	13	1610	3.14E-11	4.1	13	1815	2.63E-11	4.4	13
	1205	8.25E-11	5.4	13	1410	5.02E-11	2.9	13	1615	3.13E-11	4.1	13	1820	2.68E-11	5.0	13
	1210	6.97E-11	6.4	13	1415	5.14E-11	2.8	13	1620	3.05E-11	3.7	13	1825	2.60E-11	3.9	13
	1215	7.05E-11	10.2	13	1420	4.98E-11	3.2	13	1625	3.05E-11	3.5	13	1830	2.59E-11	3.7	13
	1220	7.02E-11	10.3	13	1425	5.07E-11	2.5	13	1630	3.02E-11	3.8	13	1835	2.53E-11	3.5	13
	1225	7.98E-11	5.5	13	1430	4.97E-11	2.8	13	1635	2.87E-11	4.4	13	1840	2.46E-11	3.4	13
	1230	7.75E-11	4.7	13	1435	4.99E-11	3.8	13	1640	2.86E-11	4.4	13	1845	2.48E-11	3.5	13
	1235	7.04E-11	4.4	13	1440	4.78E-11	3.2	13	1645	2.93E-11	4.0	13	1850	2.40E-11	2.0	13
	1240	6.28E-11	5.6	13	1445	4.67E-11	3.7	13	1650	3.05E-11	4.2	9	1855	2.36E-11	5.9	13
	1245	6.96E-11	5.4	13	1450	4.59E-11	3.7	7	1655	2.98E-11	3.0	6	1860	2.42E-11	5.6	13
	1250	6.98E-11	5.9	13	1455	4.58E-11	2.4	7	1660	2.92E-11	4.4	6	1865	2.45E-11	6.0	13
	1255	7.06E-11	5.6	13	1460	4.72E-11	2.4	7	1665	3.00E-11	3.5	8	1870	2.45E-11	6.0	13
	1260	7.20E-11	5.0	13	1465	4.79E-11	3.3	10	1670	2.97E-11	3.7	13	1875	2.37E-11	6.0	13
	1265	7.41E-11	4.6	13	1470	4.71E-11	3.6	13	1675	2.96E-11	3.8	13	1880	2.34E-11	5.7	13
	1270	7.32E-11	5.0	13	1475	4.68E-11	2.7	13	1680	3.03E-11	6.0	13	1885	2.23E-11	4.8	13
	1275	7.60E-11	5.1	13	1480	4.79E-11	3.4	13	1685	3.05E-11	6.0	13	1890	2.29E-11	4.7	13
	1280	7.48E-11	5.5	13	1485	4.70E-11	3.9	13	1690	3.00E-11	6.0	13	1895	2.30E-11	5.0	13
	1285	7.30E-11	5.5	13	1490	4.76E-11	3.4	13	1695	3.02E-11	5.0	13	1900	2.24E-11	6.0	13
	1290	7.62E-11	5.7	13	1495	4.73E-11	3.9	13	1700	2.93E-11	5.5	13	1905	2.17E-11	6.0	13
	1295	7.69E-11	5.0	13	1500	4.50E-11	5.0	13	1705	2.97E-11	5.7	13	1910	2.15E-11	6.0	13
	1300	7.16E-11	5.9	13	1505	4.49E-11	3.9	13	1710	2.92E-11	5.7	13	1915	2.15E-11	5.8	9
	1305	6.85E-11	5.0	13	1510	4.55E-11	3.0	13	1715	2.73E-11	5.6	13	1920	2.07E-11	6.9	6
	1310	6.68E-11	5.7	13	1515	4.47E-11	3.5	13	1720	2.58E-11	5.8	13	1925	2.11E-11	6.6	6
	1315	6.53E-11	5.8	13	1520	4.55E-11	3.9	13	1725	2.74E-11	5.9	13	1930	2.12E-11	5.9	9
	1320	6.56E-11	4.3	13	1525	4.46E-11	3.7	13	1730	2.85E-11	5.6	13	1935	2.09E-11	5.6	9
	1325	6.81E-11	4.5	13	1530	4.22E-11	4.8	13	1735	2.89E-11	5.9	13	1940	2.09E-11	4.6	13
	1330	6.49E-11	5.7	13	1535	4.21E-11	4.3	13	1740	2.85E-11	5.9	13	1945	2.09E-11	4.9	13
	1335	6.24E-11	5.1	13	1540	4.26E-11	4.3	13	1745	2.89E-11	5.6	13	1950	2.10E-11	4.3	13
	1340	6.32E-11	5.7	13	1545	4.05E-11	4.7	13	1750	2.80E-11	4.8	13	1955	2.10E-11	4.8	13
	1345	6.19E-11	5.4	13	1550	3.84E-11	4.0	13	1755	2.81E-11	4.0	13	1960	2.08E-11	4.9	13
	1350	5.83E-11	4.0	13	1555	4.05E-11	4.7	13	1760	2.82E-11	4.2	13	1965	2.06E-11	5.3	13
	1355	5.86E-11	2.5	13	1560	4.00E-11	3.8	13	1765	2.82E-11	4.7	13	1970	2.06E-11	6.1	13
LWR	1900	2.25E-11	8.8	13	2225	1.37E-11	10.4	13	2550	9.66E-12	3.6	13	2875	6.09E-12	3.3	13
	1905	2.13E-11	10.2	13	2230	1.40E-11	6.0	13	2555	9.50E-12	2.6	13	2880	6.30E-12	2.9	10
	1910	2.13E-11	7.9	13	2235	1.37E-11	5.2	13	2560	9.01E-12	4.8	13	2885	6.09E-12	4.7	7
	1915	2.00E-11	10.3	13	2240	1.32E-11	8.3	13	2565	9.54E-12	3.6	10	2890	5.97E-12	2.6	7
	1920	2.14E-11	6.8	13	2245	1.26E-11	5.1	13	2570	9.58E-12	5.0	6	2895	6.24E-12	2.9	7
	1925	2.23E-11	6.0	13	2250	1.20E-11	10.9	13	2575	9.20E-12	5.4	6	2900	5.83E-12	3.6	7
	1930	2.33E-11	8.0	13	2255	1.21E-11	8.2	13	2580	9.27E-12	5.4	6	2905	5.84E-12	4.6	7
	1935	2.15E-11	9.0	13	2260	1.36E-11	6.6	13	2585	8.90E-12	5.6	6	2910	6.02E-12	3.1	7
	1940	2.05E-11	8.5	13	2265	1.38E-11	5.6	13	2590	8.83E-12	5.1	6	2915	6.02E-12	5.0	7
	1945	2.02E-11	7.3	13	2270	1.37E-11	5.1	13	2595	8.56E-12	5.9	6	2920	6.11E-12	5.0	11
	1950	2.05E-11	6.2	10	2275	1.40E-11	7.2	13	2600	8.89E-12	5.8	6	2925	5.90E-12	5.0	13
	1955	2.14E-11	5.4	8	2280	1.42E-11	8.6	13	2605	8.82E-12	5.5	6	2930	5.94E-12	4.4	13
	1960	2.11E-11	5.7	8	2285	1.33E-11	5.5	13	2610	8.72E-12	5.6	13	2935	5.98E-12	5.4	13
	1965	2.00E-11	5.5	8	2290	1.34E-11	6.1	13	2615	8.96E-12	6.8	13	2940	6.03E-12	5.2	13
	1970	1.96E-11	5.5	8	2295	1.30E-11	7.4	13	2620	8.83E-12	6.1	13	2945	5.78E-12	5.5	13
	1975	2.03E-11	4.5	8	2300	1.25E-11	7.4	13	2625	8.78E-12	6.4	13	2950	5.56E-12	5.4	13
	1980	1.96E-11	8.5	13	2305	1.16E-11	10.4	13	2630	8.69E-12	4.0	13	2955	5.71E-12	5.4	13
	1985	1.96E-11	6.6	13	2310	1.20E-11	10.4	13	2635	8.66E-12	4.0	13	2960	5.95E-12	5.4	13
	1990	2.00E-11	6.5	13	2315	1.21E-11	6.8	13	2640	8.18E-12	5.6	13	2965	5.70E-12	5.7	13
	1995	1.97E-11	6.7	13	2320	1.23E-11	5.5	13	2645	8.28E-12	4.9	13	2970	5.53E-12	4.7	13
	2000	1.88E-11	5.1	13	2325	1.30E-11	7.1	13	2650	8.41E-12	4.9	13	2975	5.68E-12	4.9	13
	2005	1.90E-11	6.6	13	2330	1.30E-11	7.1	13	2655	8.73E-12	5.1	13	2980	5.61E-12	6.9	13
	2010	1.91E-11	6.1	13	2335	1.27E-11	6.4	13	2660	8.39E-12	4.2	13	2985	5.42E-12	4.9	13
	2015	1.90E-11	6.6	13	2340	1.26E-11	4.3	13	2665	8.33E-12	5.5	13	2990	5.43E-12	4.8	13
	2020	1.88E-11	6.2	13	2345	1.25E-11	5.0	13	2670	8.10E-12	5.0	13	2995	5.12E-12	4.6	13
	2025	1.88E-11	5.9	13	2350	1.25E-11	4.8	13	2675	8.12E-12	5.2	13	3000	5.11E-12	6.9	13
	2030	1.84E-11	4.7	13	2355	1.24E-11	4.9	13	2680	8.38E-12	4.2	8	3005	5.58E-12	5.9	13
	2035	1.84E-11	5.5	13	2360	1.29E-11	4.2	13	2685	8.24E-12	4.6	7	3010	5.67E-12	6.4	13
	2040	1.85E-11	4.9	13	2365	1.21E-11	4.6	13	2690	8.20E-12	4.7	7	3015	5.32E-12	7.5	13
	2045	1.85E-11	4.7	13	2370	1.20E-11	4.9	13	2695	7.91E-12	4.0	7	3020	5.30E-12	5.6	13
	2050	1.82E-11	6.0	10	2375	1.15E-11	6.0	13	2700	7.74E-12	4.5	7	3025	5.08E-12	4.8	13
	2055	1.74E-11	5.0	10	2380	1.04E-11	5.7	13	2705	7.95E-12	3.0	8	3030	4.93E-12	8.1	13
	2060	1.74E-11	5.9	10	2385	9.36E-12	3.7	13	2710	7.49E-12	5.5	13	3035	4.86E-12	11.9	13
	2065	1.75E-11	5.4	10	2390	9.89E-12	8.5	13	2715	7.36E-12	4.5	13	3040	5.02E-12	6.9	13
	2070	1.72E-11	4.6	10	2395	1.07E-11	6.2	13	2720	7.29E-12	4.0	13	3045	4.71E-12	8.7	13
	2075	1.70E-11	4.6	10	2400	1.09E-11	4.1	13	2725	6.83E-12	4.0	13	3050	4.75E-12	8.6	13
	2080	1.79E-11	5.1	13	2405	1.10E-11	4.3	13	2730	6.22E-12	5.8	13	3055	4.69E-12	7.7	13
	2085	1.71E-11	5.1	13	2410	1.06E-11	6.1	13	2735	6.08E-12	6.8	13	3060	4.83E-12	8.8	13
	2090	1.73E-11	4.6	13	2415	1.07E-11	8.9	13	2740	6.61E-12	6.2	13	3065	4.71E-12	8.6	13
	2095	1.63E-11	5.6	13	2420	1.06E-11	5.7	13	2745	7.00E-12	6.6	13	3070	4.61E-12	6.3	13
	2100	1.61E-11	5.6	13	2425	1.06E-11	5.2	13	2750	7.25E-12	7.8	13	3075	4.47E-12	10.3	13
	2105	1.67E-11	7.8	13	2430	1.12E-11	5.6	13	2755	7.13E-12	6.4	13	3080	4.91E-12	9.4	13
	2110	1.73E-11	7.5	13	2435	1.14E-11	5.1	13	2760	6.92E-12	6.6	13	3085	4.71E-12	8.8	13
	2115	1.58E-11	5.0	13	2440	1.08E-11	4.9	13	2765	6.23E-12	6.8	13	3090	4.52E-12	9.1	13
	2120	1.54E-11	4.6	13	2445	1.09E-11	4.7	13	2770	7.33E-12	6.4	13	3095	4.92E-12	10.4	13
	2125	1.59E-11	4.6	13	2450	1.11E-11	3.2	13	2775	7.13E-12	6.8	13	3100	4.78E-12	7.4	13
	2130	1.52E-11	10.4	13	2455	1.10E-11	6.5	13	2780	7.09E-12	5.6	12	3105	4.81E-12	12.6	13
	2135	1.53E-11	5.8	13	2460	1.10E-11	5.6	13	2785	6.92E-12	5.4	10	3110	4.45E-12	8.0	13
	2140	1.49E-11	5.8	13	2465	1.09E-11	4.8	13	2790	7.09E-12	6.8	10	3115	4.31E-12	8.0	13
	2145	1.54E-11	5.4	13	2470	1.03E-11	6.0	13	2795	7.01E-12	6.9	10	3120	4.37E-12	11.0	13
	2150	1.52E-11	5.4	13	2475	9.88E-12	6.0	13	2800	6.57E-12	5.5	10	3125	4.58E-12	11.4	13
	2155	1.52E-11	4.8	7	2480	1.00E-11	6.5	13	2805	6.64E-12	6.3	13	3130	4.52E-12	9.2	13
	2160	1.51E-11	4.2	7	2485	1.02E-11	5.9	13	2810	6.56E-12	5.8	13	3135	4.25E-12	12.5	13
	2165	1.41E-11	4.2	7	2490	9.90E-12	5.0	13	2815	6.86E-12	6.2	13	3140	4.35E-12	9.9	13
	2170	1.47E-11	4.6	7	2495	9.50E-12	4.9	13	2820	6.73E-12	4.9	13	3145	4.21E-12	11.9	13
	2175	1.54E-11	4.6	7	2500	9.03E-12	4.0	13	2825	6.38E-12	5.3	13	3150	4.15E-12	10.8	13
	2180	1.47E-11	4.6	7	2505	9.42E-12	4.0	13	2830	6.35E-12	4.7	13	3155	4.04E-12	15.8	13
	2185	1.41E-11	4.4	7	2510	8.14E-12	4.6	13	2835	6.44E-12	4.6	13	3160	3.94E-12	12.5	13
	2190	1.46E-11	8.1	11	2515	8.25E-12	4.4	13	2840	6.43E-12	4.0	13	3165	3.93E-12	16.7	13
	2195	1.51E-11	11.0	13	2520	8.89E-12	4.4	13	2845	6.40E-12	4.3	13	3170	3.99E-12	21.7	13
	2200	1.53E-11	5.9	13	2525	9.20E-12	4.4	13	2850	6.49E-12	4.4	13	3175	3.94E-12	17.6	13
	2205	1.42E-11	5.9	13	2530	9.84E-12	2.7	13	2855	6.42E-12	5.2	13	3180	4.03E-12	18.2	13
	2210	1.37E-11	5.6	13	2535	9.56E-12	4.7	13	2860	6.55E-12	4.0	13	3185	4.68E-12	9.8	13
	2215	1.26E-11	5.1	13	2540	9.49E-12	2.2	13	2865	6.21E-12	4.0	13	3190	4.97E-12	18.8	13
	2220	1.29E-11	7.5	13	2545	9.39E-12	4.2	13	2870	6.07E-12	5.2	13	3195	3.54E-12	30.0	13

TABLE 2 – *Continued*

HD93521

SWP

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1155	3.34E-10	9.4	28	1360	2.74E-10	4.2	28	1565	1.32E-10	9.3	28	1770	1.41E-10	4.3	28
1160	3.29E-10	10.1	28	1365	2.76E-10	4.1	28	1570	1.38E-10	6.6	28	1775	1.43E-10	4.4	28
1165	3.42E-10	6.2	28	1370	2.76E-10	4.1	28	1575	1.52E-10	3.3	23	1780	1.41E-10	5.2	15
1170	3.79E-10	7.4	28	1375	2.68E-10	4.6	28	1580	1.52E-10	3.7	15	1785	1.38E-10	5.7	15
1175	3.17E-10	6.3	28	1380	2.64E-10	3.2	28	1585	1.59E-10	3.7	15	1790	1.35E-10	4.4	15
1180	2.70E-10	7.1	15	1385	2.52E-10	3.5	28	1590	1.59E-10	4.2	15	1795	1.35E-10	4.4	15
1185	2.77E-10	5.5	15	1390	1.86E-10	2.5	28	1595	1.50E-10	4.1	15	1800	1.35E-10	4.4	26
1190	2.79E-10	7.0	15	1395	1.77E-10	3.0	28	1600	1.42E-10	3.8	28	1805	1.33E-10	4.9	28
1195	2.59E-10	4.8	13	1400	1.71E-10	8.1	28	1605	1.23E-10	3.4	28	1810	1.28E-10	4.7	28
1200	2.31E-10	5.6	13	1405	1.97E-10	7.9	28	1610	1.09E-10	5.8	28	1815	1.34E-10	4.1	28
1205	2.06E-10	5.4	28	1410	2.29E-10	5.7	28	1615	1.07E-10	7.6	28	1820	1.37E-10	3.8	28
1210	1.86E-10	9.2	28	1415	2.28E-10	4.8	28	1620	1.11E-10	5.3	28	1825	1.31E-10	3.6	28
1215	2.14E-10	8.5	28	1420	2.31E-10	4.0	28	1625	1.12E-10	4.0	28	1830	1.30E-10	3.2	28
1220	2.17E-10	17.0	28	1425	2.14E-10	5.9	28	1630	1.06E-10	4.6	28	1835	1.37E-10	3.5	28
1225	2.14E-10	5.4	28	1430	2.06E-10	4.2	28	1635	1.17E-10	5.3	28	1840	1.29E-10	3.5	28
1230	2.27E-10	5.1	28	1435	2.22E-10	5.0	28	1640	1.24E-10	4.4	28	1845	1.25E-10	3.1	28
1235	2.92E-10	4.6	28	1440	2.25E-10	6.2	28	1645	1.41E-10	2.2	28	1850	1.20E-10	3.1	28
1240	3.07E-10	4.6	28	1445	2.20E-10	4.6	26	1650	1.35E-10	2.6	19	1855	1.13E-10	3.8	28
1245	2.72E-10	2.8	28	1450	2.13E-10	4.5	15	1655	1.24E-10	3.9	13	1860	1.16E-10	3.8	28
1250	3.16E-10	4.1	28	1455	2.05E-10	3.7	15	1660	1.15E-10	3.5	13	1865	1.21E-10	3.6	28
1255	3.02E-10	3.8	28	1460	2.05E-10	3.9	15	1665	1.24E-10	4.7	20	1870	1.31E-10	3.9	28
1260	3.13E-10	3.8	28	1465	2.11E-10	4.6	26	1670	1.24E-10	5.0	28	1875	1.18E-10	4.0	28
1265	3.43E-10	3.0	28	1470	2.16E-10	5.9	28	1675	1.25E-10	4.1	28	1880	1.22E-10	4.0	28
1270	3.48E-10	3.2	28	1475	2.21E-10	5.0	28	1680	1.46E-10	3.1	28	1885	1.13E-10	4.8	28
1275	3.46E-10	2.2	27	1480	2.25E-10	4.0	28	1685	1.46E-10	3.2	28	1890	1.10E-10	5.7	28
1280	3.41E-10	2.6	27	1485	2.23E-10	5.0	28	1690	1.37E-10	3.3	28	1895	1.13E-10	4.7	28
1285	3.30E-10	2.3	28	1490	2.29E-10	4.6	28	1695	1.31E-10	3.9	28	1900	1.17E-10	4.4	28
1290	3.19E-10	3.1	28	1495	2.17E-10	4.5	28	1700	1.28E-10	3.8	28	1905	1.16E-10	4.1	28
1295	2.83E-10	3.7	28	1500	1.97E-10	4.8	28	1705	1.30E-10	3.7	28	1910	1.14E-10	4.1	28
1300	2.55E-10	4.3	28	1505	2.00E-10	4.2	28	1710	1.25E-10	3.2	28	1915	1.10E-10	5.0	20
1305	2.85E-10	5.0	28	1510	2.17E-10	4.2	28	1715	1.19E-10	3.9	28	1920	1.07E-10	5.5	13
1310	3.23E-10	2.8	27	1515	2.12E-10	5.7	28	1720	1.10E-10	4.2	28	1925	1.05E-10	5.2	13
1315	3.16E-10	3.1	26	1520	2.11E-10	6.6	28	1725	1.15E-10	4.2	28	1930	1.08E-10	5.1	13
1320	3.09E-10	3.9	26	1525	1.81E-10	6.4	28	1730	1.31E-10	3.2	28	1935	1.15E-10	4.1	15
1325	3.06E-10	2.9	28	1530	1.55E-10	5.9	28	1735	1.40E-10	3.0	28	1940	1.13E-10	4.0	28
1330	2.98E-10	2.8	28	1535	1.43E-10	4.4	28	1740	1.38E-10	3.5	28	1945	1.14E-10	4.4	28
1335	2.63E-10	2.8	28	1540	1.43E-10	5.3	28	1745	1.38E-10	3.8	28	1950	1.13E-10	4.6	28
1340	2.79E-10	4.2	28	1545	8.79E-11	12.7	28	1750	1.30E-10	2.4	28	1955	1.08E-10	3.9	28
1345	2.79E-10	4.4	28	1550	9.50E-11	18.2	28	1755	1.36E-10	2.8	28	1960	1.07E-10	4.2	28
1350	2.86E-10	3.0	28	1555	1.83E-10	6.0	28	1760	1.45E-10	3.9	28	1965	1.10E-10	5.2	28
1355	2.87E-10	2.7	28	1560	1.52E-10	7.4	28	1765	1.41E-10	4.3	28	1970	1.16E-10	6.4	28

LWR

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1900	1.11E-10	17.5	26	2225	8.93E-11	6.4	26	2550	6.61E-11	4.7	26	2875	4.54E-11	4.4	26
1905	1.13E-10	13.2	26	2230	8.77E-11	6.6	26	2555	6.31E-11	4.3	26	2880	4.58E-11	6.0	21
1910	1.14E-10	15.1	26	2235	8.53E-11	5.7	26	2560	6.07E-11	4.2	26	2885	4.53E-11	4.4	13
1915	1.02E-10	15.9	26	2240	8.13E-11	7.6	26	2565	6.42E-11	4.0	18	2890	4.52E-11	4.1	13
1920	1.02E-10	11.9	26	2245	8.26E-11	6.4	26	2570	6.30E-11	4.8	13	2895	4.76E-11	5.3	13
1925	1.06E-10	7.4	26	2250	8.27E-11	9.4	26	2575	6.33E-11	3.3	13	2900	4.45E-11	5.2	13
1930	1.15E-10	10.4	26	2255	8.63E-11	8.2	26	2580	6.21E-11	4.7	13	2905	4.30E-11	6.2	13
1935	1.12E-10	9.2	26	2260	8.96E-11	6.9	26	2585	5.87E-11	4.0	13	2910	4.41E-11	6.5	13
1940	1.08E-10	7.4	26	2265	8.76E-11	7.4	26	2590	5.79E-11	3.7	13	2915	4.42E-11	6.6	13
1945	1.10E-10	7.5	26	2270	8.27E-11	6.4	26	2595	5.55E-11	5.7	13	2920	4.41E-11	6.0	17
1950	1.14E-10	7.5	24	2275	8.65E-11	7.5	26	2600	5.70E-11	4.3	13	2925	4.39E-11	5.3	26
1955	1.11E-10	7.5	19	2280	8.74E-11	6.8	26	2605	6.00E-11	4.0	13	2930	4.37E-11	5.4	26
1960	1.02E-10	6.6	19	2285	8.16E-11	4.9	26	2610	6.13E-11	4.9	26	2935	4.42E-11	5.5	26
1965	1.00E-10	8.0	19	2290	7.93E-11	5.0	26	2615	6.18E-11	4.2	26	2940	4.29E-11	5.3	26
1970	1.09E-10	5.6	19	2295	7.21E-11	7.7	26	2620	6.12E-11	4.3	26	2945	4.16E-11	6.2	26
1975	1.16E-10	10.6	20	2300	7.52E-11	7.4	26	2625	5.99E-11	5.0	26	2950	4.08E-11	6.6	26
1980	1.12E-10	9.8	26	2305	7.90E-11	7.7	26	2630	5.97E-11	5.0	26	2955	4.19E-11	7.0	26
1985	1.09E-10	9.2	26	2310	8.21E-11	5.8	26	2635	6.08E-11	5.1	26	2960	4.40E-11	5.3	26
1990	1.05E-10	8.0	26	2315	8.01E-11	7.7	26	2640	5.81E-11	5.0	26	2965	4.10E-11	7.3	26
1995	1.03E-10	6.8	26	2320	8.19E-11	7.3	26	2645	5.79E-11	4.8	26	2970	4.09E-11	6.8	26
2000	1.06E-10	5.7	26	2325	8.53E-11	4.7	26	2650	5.85E-11	5.8	26	2975	4.16E-11	6.3	26
2005	1.11E-10	5.4	26	2330	8.52E-11	5.7	26	2655	6.02E-11	7.1	26	2980	3.98E-11	6.3	26
2010	1.10E-10	5.0	26	2335	8.53E-11	6.6	26	2660	5.86E-11	5.5	26	2985	3.94E-11	6.1	26
2015	1.11E-10	8.0	26	2340	7.96E-11	5.4	26	2665	5.85E-11	5.1	26	2990	3.88E-11	5.5	26
2020	1.13E-10	6.7	26	2345	7.78E-11	5.2	26	2670	5.76E-11	5.9	26	2995	3.82E-11	6.5	26
2025	1.15E-10	7.1	26	2350	7.95E-11	7.0	26	2675	5.61E-11	5.9	26	3000	3.82E-11	6.9	26
2030	1.11E-10	9.0	26	2355	8.04E-11	5.6	26	2680	5.59E-11	5.0	19	3005	3.84E-11	7.9	26
2035	1.08E-10	7.8	26	2360	8.27E-11	6.4	26	2685	5.68E-11	5.0	15	3010	3.92E-11	7.1	26
2040	1.08E-10	7.1	26	2365	7.93E-11	6.4	26	2690	5.56E-11	5.9	15	3015	3.71E-11	7.2	26
2045	1.10E-10	8.2	26	2370	7.77E-11	6.4	26	2695	5.36E-11	5.2	15	3020	3.69E-11	6.6	26
2050	1.08E-10	5.7	21	2375	7.45E-11	6.3	26	2700	5.20E-11	4.6	15	3025	3.57E-11	8.5	26
2055	1.04E-10	2.4	19	2380	7.17E-11	6.7	26	2705	5.35E-11	5.4	20	3030	3.58E-11	10.2	26
2060	1.03E-10	6.0	19	2385	7.07E-11	4.7	26	2710	5.40E-11	4.8	26	3035	3.66E-11	8.3	26
2065	1.02E-10	6.1	19	2390	7.37E-11	6.2	26	2715	5.36E-11	5.5	26	3040	3.61E-11	9.5	26
2070	9.92E-11	5.2	19	2395	7.43E-11	5.5	26	2720	5.13E-11	5.3	26	3045	3.42E-11	9.4	26
2075	1.06E-10	5.1	19	2400	7.43E-11	4.5	26	2725	5.19E-11	3.4	26	3050	3.54E-11	7.8	26
2080	1.10E-10	7.7	25	2405	7.46E-11	4.4	26	2730	5.03E-11	4.5	26	3055	3.54E-11	7.4	26
2085	1.03E-10	6.3	26	2410	7.34E-11	6.8	26	2735	5.00E-11	4.0	26	3060	3.52E-11	7.5	26
2090	1.04E-10	6.0	26	2415	7.32E-11	7.4	26	2740	5.06E-11	4.5	26	3065	3.50E-11	7.7	26
2095	9.92E-11	6.4	26	2420	7.25E-11	5.9	26	2745	5.09E-11	3.7	26	3070	3.50E-11	7.7	26
2100	9.64E-11	5.5	26	2425	7.12E-11	5.4	26	2750	5.13E-11	3.2	26	3075	3.54E-11	8.0	26
2105	9.85E-11	8.9	26	2430	7.35E-11	7.3	26	2755	5.10E-11	3.5	26	3080	3.52E-11	9.3	26
2110	1.05E-10	5.2	26	2435	7.33E-11	7.1	26	2760	4.86E-11	4.2	26	3085	3.53E-11	9.1	26
2115	1.01E-10	8.0	26	2440	7.26E-11	5.3	26	2765	4.89E-11	5.6	26	3090	3.44E-11	8.7	26
2120	9.89E-11	6.1	26	2445	7.28E-11	4.5	26	2770	5.01E-11	3.2	26	3095	3.39E-11	9.7	26
2125	1.02E-10	8.2	26	2450	7.39E-11	4.5	26	2775	5.00E-11	4.6	26	3100	3.44E-11	8.9	26
2130	9.87E-11	8.8	26	2455	7.41E-11	6.9	26	2780	5.04E-11	4.9	23	3105	3.52E-11	9.9	26
2135	9.99E-11	6.0	26	2460	7.37E-11	6.9	26	2785	4.84E-11	5.4	20	3110	3.32E-11	7.6	26
2140	9.70E-11	6.9	26	2465	7.27E-11	6.6	26	2790	4.78E-11	8.9	20	3115	3.22E-11	8.8	26
2145	9.90E-11	7.2	21	2470	7.05E-11	6.5	26	2795	4.46E-11	7.3	20	3120	3.14E-11	8.8	26
2150	9.80E-11	6.9	13	2475	6.92E-11	4.5	26	2800	4.21E-11	7.7	20	3125	3.26E-11	9.8	26
2155	1.02E-10	6.0	13	2480	6.86E-11	5.6	26	2805	4.37E-11	5.0	21	3130	3.26E-11	11.9	26
2160	9.68E-11	5.1	13	2485	7.02E-11	5.9	26	2810	4.47E-11	5.0	26	3135	3.19E-11	9.8	26
2165	9.10E-11	5.3	13	2490	6.72E-11	5.2	25	2815	4.88E-11	5.4	26	3140	3.15E-11	11.9	26
2170	9.51E-11	8.6	13	2495	6.64E-11	5.4	26	2820	4.89E-11	4.1	26	3145	3.19E-11	12.7	26
2175	9.51E-11	8.0	13	2500	7.06E-11	6.4	26	2825	4.65E-11	6.4	26	3150	3.22E-11	12.5	26
2180	9.18E-11	6.1	13	2505	6.79E-11	5.5	26	2830	4.50E-11	5.0	26	3155	3.22E-11	15.2	26
2185	9.74E-11	6.5	15	2510	6.55E-11	5.3	26	2835	4.59E-11	4.0	26	3160	3.02E-11	19.0	26
2190	9.92E-11	11.0	19	2515	6.37E-11	5.1	26	2840	4.66E-11	6.4	26	3165	2.89E-11	16.9	26
2195	9.45E-11	15.8	26	2520	6.26E-11	5.3	26	2845	4.60E-11	5.4	26	3170	2.85E-11	16.9	26
2200	9.24E-11	9.1	26	2525	6.45E-11	5.4	26	2850	4.52E-11	7.1	26	3175	2.94E-11	17.4	26
2205	8.56E-11	7.8	26	2530	6.70E-11	4.6	26	2855	4.54E-11	4.1	26	3180	3.07E-11	17.5	26
2210	8.29E-11	6.8	26	2535	6.63E-11	5.8	26	2860	4.83E-11	5.1	26	3185	3.25E-11	18.3	26
2215	8.34E-11	6.4	26	2540	6.37E-11	5.0	26	2865	4.65E-11	5.6	26	3190	2.59E-11	19.8	26
2220	8.79E-11	6.3	26	2545	6.33E-11	4.3	26	2870	4.49E-11	5.9	26	3195	2.84E-11	19.3	26

TABLE 2 - *Continued*

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SWP

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1155	4.03E-12	15.1	12	1360	3.66E-12	4.3	12	1565	2.67E-12	4.3	12	1770	2.23E-12	5.5	12
1160	4.31E-12	15.1	12	1365	3.65E-12	4.7	12	1570	2.69E-12	3.8	12	1775	2.18E-12	4.8	12
1165	4.12E-12	11.3	12	1370	3.58E-12	3.9	12	1575	2.74E-12	5.1	9	1780	2.16E-12	2.9	9
1170	3.78E-12	7.9	12	1375	3.47E-12	3.6	12	1580	2.59E-12	4.4	8	1785	2.17E-12	4.2	4
1175	4.10E-12	10.3	12	1380	3.50E-12	4.5	12	1585	2.69E-12	4.0	8	1790	2.21E-12	5.4	4
1180	3.85E-12	6.8	4	1385	3.54E-12	3.9	12	1590	2.68E-12	3.5	8	1795	2.17E-12	5.0	4
1185	3.95E-12	9.5	4	1390	3.15E-12	4.0	12	1595	2.51E-12	3.9	8	1800	2.22E-12	4.5	11
1190	3.77E-12	4.8	4	1395	2.92E-12	5.4	12	1600	2.49E-12	5.3	12	1805	2.17E-12	4.3	12
1195	3.20E-12	4.0	4	1400	3.06E-12	4.7	12	1605	2.40E-12	5.8	12	1810	2.13E-12	4.4	12
1200	3.80E-12	4.9	4	1405	3.17E-12	3.7	12	1610	2.32E-12	6.4	12	1815	2.16E-12	4.6	12
1205	3.46E-12	7.8	12	1410	3.36E-12	4.0	12	1615	2.46E-12	6.6	12	1820	2.19E-12	3.8	12
1210	4.18E-12	18.4	12	1415	3.29E-12	4.8	12	1620	2.39E-12	4.9	12	1825	2.14E-12	4.8	12
1215	3.89E-12	19.1	12	1420	3.28E-12	4.8	12	1625	2.37E-12	2.9	12	1830	2.11E-12	4.5	12
1220	3.73E-12	13.9	12	1425	3.38E-12	5.2	12	1630	2.43E-12	4.9	12	1835	2.05E-12	5.0	12
1225	3.66E-12	10.8	12	1430	3.29E-12	3.5	12	1635	2.40E-12	2.7	12	1840	1.96E-12	5.0	12
1230	3.94E-12	7.6	12	1435	3.39E-12	3.8	12	1640	2.35E-12	2.5	12	1845	1.90E-12	5.0	12
1235	4.18E-12	7.9	12	1440	3.42E-12	6.9	12	1645	2.38E-12	5.8	12	1850	1.84E-12	4.9	12
1240	4.21E-12	7.6	12	1445	3.37E-12	6.6	11	1650	2.31E-12	4.9	8	1855	1.81E-12	4.6	12
1245	4.08E-12	5.4	12	1450	3.29E-12	6.4	8	1655	2.40E-12	4.6	4	1860	1.87E-12	4.5	12
1250	3.90E-12	4.5	12	1455	3.34E-12	7.6	8	1660	2.38E-12	2.8	4	1865	1.88E-12	4.7	12
1255	3.80E-12	4.8	12	1460	3.31E-12	4.0	8	1665	2.27E-12	4.7	12	1870	1.95E-12	4.9	12
1260	3.93E-12	5.5	12	1465	3.29E-12	5.3	12	1670	2.20E-12	6.7	12	1875	1.94E-12	4.9	12
1265	3.98E-12	4.2	12	1470	3.32E-12	5.0	12	1675	2.22E-12	4.9	12	1880	1.81E-12	4.5	12
1270	4.25E-12	5.6	12	1475	3.17E-12	3.8	12	1680	2.36E-12	4.6	12	1885	1.63E-12	4.5	12
1275	4.15E-12	4.8	12	1480	3.24E-12	5.5	12	1685	2.31E-12	5.6	12	1890	1.55E-12	4.8	12
1280	4.15E-12	4.5	12	1485	3.31E-12	4.6	12	1690	2.37E-12	5.9	12	1895	1.61E-12	4.5	12
1285	4.11E-12	4.9	12	1490	3.31E-12	5.4	12	1695	2.34E-12	5.6	12	1900	1.65E-12	4.4	12
1290	3.91E-12	5.9	12	1495	3.24E-12	5.1	12	1700	2.29E-12	3.8	12	1905	1.67E-12	4.7	12
1295	3.93E-12	5.6	12	1500	3.03E-12	4.3	12	1705	2.22E-12	3.5	12	1910	1.57E-12	5.7	12
1300	3.92E-12	5.4	12	1505	2.93E-12	4.1	12	1710	[illegible]	5.6	12	1915	1.55E-12	4.8	12
1305	3.52E-12	4.9	12	1510	2.94E-12	4.0	12	1715	2.10E-12	5.9	12	1920	1.49E-12	5.5	9
1310	4.07E-12	7.2	12	1515	2.95E-12	4.0	12	1720	2.08E-12	2.7	12	1925	1.51E-12	4.2	4
1315	4.14E-12	7.2	12	1520	2.99E-12	5.8	12	1725	2.14E-12	2.6	12	1930	1.57E-12	4.4	4
1320	3.90E-12	7.0	11	1525	2.86E-12	4.3	12	1730	2.26E-12	5.1	12	1935	1.65E-12	4.4	4
1325	3.72E-12	5.2	11	1530	2.75E-12	5.4	12	1735	2.28E-12	3.8	12	1940	1.65E-12	5.8	12
1330	3.69E-12	5.4	12	1535	2.70E-12	4.7	12	1740	2.22E-12	4.6	12	1945	1.67E-12	5.8	12
1335	3.29E-12	5.6	12	1540	2.71E-12	5.9	12	1745	2.24E-12	6.6	12	1950	1.62E-12	6.4	12
1340	3.60E-12	5.1	12	1545	2.57E-12	4.0	12	1750	2.20E-12	5.1	12	1955	1.59E-12	4.5	12
1345	3.62E-12	6.4	12	1550	2.45E-12	4.3	12	1755	2.25E-12	5.1	12	1960	1.58E-12	5.5	12
1350	3.75E-12	3.9	12	1555	2.78E-12	6.8	12	1760	2.26E-12	3.9	12	1965	1.56E-12	5.5	12
1355	3.75E-12	2.3	12	1560	2.72E-12	3.9	12	1765	2.28E-12	3.8	12	1970	1.72E-12	6.4	12

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LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1900	1.51E-12	19.9	11	2225	1.31E-12	6.5	11	2550	1.11E-12	6.8	11	2875	8.47E-13	5.2	11
1905	1.52E-12	16.1	11	2230	1.33E-12	5.9	11	2555	1.05E-12	5.4	11	2880	8.72E-13	5.1	9
1910	1.55E-12	18.5	11	2235	1.26E-12	5.5	11	2560	1.04E-12	5.1	11	2885	8.55E-13	5.1	7
1915	1.40E-12	24.7	11	2240	1.26E-12	10.0	11	2565	1.09E-12	7.8	10	2890	8.56E-13	4.7	7
1920	1.40E-12	28.3	11	2245	1.28E-12	4.7	11	2570	1.08E-12	5.3	4	2895	8.52E-13	4.4	7
1925	1.57E-12	18.9	11	2250	1.38E-12	9.9	11	2575	1.04E-12	5.9	4	2900	8.05E-13	4.1	7
1930	1.72E-12	20.0	11	2255	1.36E-12	7.6	11	2580	1.02E-12	5.8	4	2905	7.87E-13	4.6	7
1935	1.73E-12	16.1	11	2260	1.39E-12	7.6	11	2585	1.01E-12	5.9	4	2910	8.10E-13	5.2	7
1940	1.64E-12	10.0	11	2265	1.35E-12	7.6	11	2590	9.87E-13	4.6	4	2915	8.34E-13	4.5	7
1945	1.71E-12	9.7	11	2270	1.36E-12	7.4	11	2595	9.57E-13	4.8	4	2920	8.07E-13	4.6	11
1950	1.81E-12	8.2	8	2275	1.44E-12	6.8	11	2600	9.74E-13	4.3	4	2925	7.83E-13	4.9	11
1955	1.74E-12	10.5	7	2280	1.45E-12	9.2	11	2605	1.02E-12	4.8	9	2930	8.20E-13	4.8	11
1960	1.69E-12	10.7	7	2285	1.34E-12	11.7	11	2610	1.06E-12	4.8	11	2935	8.20E-13	2.7	11
1965	1.62E-12	10.8	7	2290	1.33E-12	9.9	11	2615	1.08E-12	4.4	11	2940	8.04E-13	3.7	11
1970	1.72E-12	9.6	7	2295	1.35E-12	5.4	11	2620	1.06E-12	4.4	11	2945	7.84E-13	3.3	11
1975	1.91E-12	9.5	7	2300	1.35E-12	5.4	11	2625	1.02E-12	5.5	11	2950	7.66E-13	5.9	11
1980	1.77E-12	9.9	10	2305	1.38E-12	6.4	11	2630	1.03E-12	4.7	11	2955	8.26E-13	5.3	11
1985	1.71E-12	11.4	11	2310	1.41E-12	20.4	11	2635	1.03E-12	5.9	11	2960	8.68E-13	6.3	11
1990	1.68E-12	7.9	11	2315	1.36E-12	17.1	11	2640	9.99E-13	7.7	11	2965	7.99E-13	6.0	11
1995	1.56E-12	10.5	11	2320	1.31E-12	7.1	11	2645	9.75E-13	5.8	11	2970	7.77E-13	6.8	11
2000	1.53E-12	8.5	11	2325	1.25E-12	7.9	11	2650	1.01E-12	5.8	11	2975	7.92E-13	6.0	11
2005	1.64E-12	9.5	11	2330	1.22E-12	5.9	11	2655	1.06E-12	4.8	11	2980	7.82E-13	6.5	11
2010	1.65E-12	8.7	11	2335	1.24E-12	6.2	11	2660	1.03E-12	4.2	11	2985	7.66E-13	6.8	11
2015	1.61E-12	8.4	11	2340	1.20E-12	6.8	11	2665	1.00E-12	6.2	11	2990	7.51E-13	5.9	11
2020	1.67E-12	9.7	11	2345	1.28E-12	6.9	11	2670	9.83E-13	4.7	11	2995	7.60E-13	6.7	11
2025	1.67E-12	9.4	11	2350	1.30E-12	6.5	11	2675	9.93E-13	5.8	11	3000	7.51E-13	7.5	11
2030	1.66E-12	7.2	11	2355	1.27E-12	6.0	11	2680	9.03E-13	5.9	7	3005	7.56E-13	5.4	11
2035	1.58E-12	12.0	11	2360	1.25E-12	4.4	11	2685	9.93E-13	5.9	7	3010	7.64E-13	5.4	11
2040	1.57E-12	9.8	11	2365	1.25E-12	4.7	11	2690	1.00E-12	4.3	7	3015	7.33E-13	6.0	11
2045	1.62E-12	7.8	11	2370	1.19E-12	6.5	11	2695	9.54E-13	4.7	7	3020	7.26E-13	6.8	11
2050	1.63E-12	5.0	11	2375	1.13E-12	5.9	11	2700	9.43E-13	4.4	7	3025	7.06E-13	6.6	11
2055	1.66E-12	7.3	6	2380	1.12E-12	5.9	11	2705	9.94E-13	5.4	7	3030	6.99E-13	5.8	11
2060	1.61E-12	7.2	6	2385	1.18E-12	6.5	11	2710	9.41E-13	6.7	9	3035	7.00E-13	7.9	11
2065	1.53E-12	6.1	6	2390	1.22E-12	5.1	11	2715	9.32E-13	6.6	11	3040	6.36E-13	6.8	11
2070	1.52E-12	7.0	6	2395	1.23E-12	6.9	11	2720	9.16E-13	5.9	11	3045	6.89E-13	6.0	11
2075	1.58E-12	4.8	6	2400	1.16E-12	7.0	11	2725	9.12E-13	5.9	11	3050	6.95E-13	8.0	11
2080	1.59E-12	6.4	11	2405	1.23E-12	7.0	11	2730	9.15E-13	6.0	11	3055	7.10E-13	10.1	11
2085	1.54E-12	6.1	11	2410	1.19E-12	9.0	11	2735	9.54E-13	5.0	11	3060	6.86E-13	9.2	11
2090	1.56E-12	6.5	11	2415	1.19E-12	9.0	11	2740	9.05E-13	6.9	11	3065	6.83E-13	7.9	11
2095	1.54E-12	6.9	11	2420	1.15E-12	5.1	11	2745	9.09E-13	6.0	11	3070	6.72E-13	7.4	11
2100	1.46E-12	6.0	11	2425	1.19E-12	5.8	11	2750	9.12E-13	5.8	11	3075	6.56E-13	10.6	11
2105	1.47E-12	6.6	11	2430	1.19E-12	4.9	11	2755	8.98E-13	6.9	11	3080	7.07E-13	9.4	11
2110	1.60E-12	5.5	11	2435	1.15E-12	4.9	11	2760	8.80E-13	6.3	11	3085	6.94E-13	8.4	11
2115	1.52E-12	5.3	11	2440	1.20E-12	4.8	11	2765	8.81E-13	5.0	11	3090	6.84E-13	5.0	11
2120	1.44E-12	5.0	11	2445	1.23E-12	5.1	11	2770	8.95E-13	5.7	11	3095	6.91E-13	5.8	11
2125	1.45E-12	6.8	11	2450	1.26E-12	7.1	11	2775	8.96E-13	5.2	11	3100	7.05E-13	5.6	11
2130	1.51E-12	12.8	11	2455	1.21E-12	7.6	11	2780	8.93E-13	4.5	10	3105	6.81E-13	4.8	11
2135	1.50E-12	7.9	11	2460	1.23E-12	6.5	11	2785	8.94E-13	4.6	10	3110	6.41E-13	4.3	11
2140	1.42E-12	5.4	11	2465	1.21E-12	7.8	11	2790	9.07E-13	4.4	10	3115	6.65E-13	4.6	11
2145	1.44E-12	6.8	11	2470	1.15E-12	6.8	11	2795	8.92E-13	4.2	10	3120	6.60E-13	7.6	11
2150	1.45E-12	5.7	11	2475	1.11E-12	7.8	11	2800	8.46E-13	4.4	11	3125	6.94E-13	11.9	11
2155	1.53E-12	8.4	7	2480	1.16E-12	7.8	11	2805	8.04E-13	4.7	11	3130	7.16E-13	11.5	11
2160	1.51E-12	6.4	7	2485	1.13E-12	6.9	11	2810	8.48E-13	4.1	11	3135	6.67E-13	10.8	11
2165	1.40E-12	6.2	7	2490	1.11E-12	6.3	11	2815	8.96E-13	4.3	11	3140	6.60E-13	12.1	11
2170	1.42E-12	6.9	7	2495	1.06E-12	4.5	11	2820	9.04E-13	4.0	11	3145	6.18E-13	13.6	11
2175	1.42E-12	4.9	7	2500	1.20E-12	5.6	11	2825	8.33E-13	4.8	11	3150	6.37E-13	14.7	11
2180	1.45E-12	6.9	7	2505	1.08E-12	6.8	11	2830	8.08E-13	5.6	11	3155	5.96E-13	14.5	11
2185	1.55E-12	12.6	7	2510	1.10E-12	6.6	11	2835	8.30E-13	5.9	11	3160	6.40E-13	17.6	11
2190	1.65E-12	18.0	9	2515	1.06E-12	5.2	11	2840	8.47E-13	5.4	11	3165	6.85E-13	16.5	11
2195	1.57E-12	8.6	11	2520	1.06E-12	4.7	11	2845	8.57E-13	4.9	11	3170	6.13E-13	23.6	11
2200	1.49E-12	8.0	11	2525	1.06E-12	4.5	11	2850	8.43E-13	4.7	11	3175	6.53E-13	22.9	11
2205	1.40E-12	8.0	11	2530	1.09E-12	5.5	11	2855	8.57E-13	7.4	11	3180	6.82E-13	20.4	11
2210	1.44E-12	9.0	11	2535	1.09E-12	4.8	11	2860	8.67E-13	4.8	11	3185	6.52E-13	26.2	11
2215	1.37E-12	9.0	11	2540	1.08E-12	4.8	11	2865	8.58E-13	4.5	11	3190	7.32E-13	16.1	11
2220	1.27E-12	7.3	11	2545	1.09E-12	6.8	11	2870	8.60E-13	8.2	11	3195	6.23E-13	22.1	11

TABLE 8 - *Continued*

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SWP

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1155	7.08E-11	10.9	24	1360	3.80E-11	5.1	24	1565	2.32E-11	4.9	24	1770	1.46E-11	4.8	24
1160	6.98E-11	11.3	24	1365	3.74E-11	5.3	24	1570	2.28E-11	4.7	24	1775	1.44E-11	4.2	23
1165	6.74E-11	11.6	24	1370	3.71E-11	5.0	24	1575	2.21E-11	4.9	16	1780	1.42E-11	6.0	13
1170	6.71E-11	8.4	24	1375	3.51E-11	4.8	24	1580	2.21E-11	6.1	15	1785	1.42E-11	5.9	13
1175	6.79E-11	7.4	24	1380	3.62E-11	5.0	24	1585	2.18E-11	6.1	13	1790	1.41E-11	5.2	13
1180	6.81E-11	7.1	19	1385	3.61E-11	4.5	24	1590	2.10E-11	6.1	13	1795	1.40E-11	5.1	13
1185	6.55E-11	8.5	13	1390	3.48E-11	4.8	24	1595	2.05E-11	5.7	13	1800	1.38E-11	5.0	24
1190	6.43E-11	6.4	13	1395	3.45E-11	4.4	24	1600	2.01E-11	5.5	12	1805	1.36E-11	5.0	24
1195	6.08E-11	6.4	13	1400	3.29E-11	4.4	24	1605	1.97E-11	5.4	13	1810	1.35E-11	5.0	24
1200	6.02E-11	6.5	13	1405	3.25E-11	5.6	24	1610	1.94E-11	5.4	24	1815	1.34E-11	4.9	24
1205	5.70E-11	6.4	13	1410	3.33E-11	5.5	24	1615	1.93E-11	5.4	24	1820	1.33E-11	4.9	24
1210	4.24E-11	17.4	24	1415	3.32E-11	4.4	24	1620	1.87E-11	5.4	24	1825	1.29E-11	4.7	24
1215	2.84E-11	14.0	24	1420	3.21E-11	4.4	24	1625	1.79E-11	5.7	24	1830	1.29E-11	4.5	24
1220	4.20E-11	21.0	24	1425	3.26E-11	4.4	24	1630	1.80E-11	5.4	24	1835	1.27E-11	4.6	24
1225	5.55E-11	6.0	24	1430	3.25E-11	4.5	24	1635	1.80E-11	5.4	24	1840	1.25E-11	4.6	24
1230	5.57E-11	6.0	24	1435	3.22E-11	4.7	24	1640	1.80E-11	5.0	24	1845	1.25E-11	4.8	24
1235	5.30E-11	6.6	24	1440	3.10E-11	4.2	24	1645	1.69E-11	7.0	21	1850	1.22E-11	4.7	24
1240	4.89E-11	6.8	24	1445	3.04E-11	6.4	21	1650	1.65E-11	5.6	15	1855	1.19E-11	5.2	24
1245	5.24E-11	6.4	24	1450	3.02E-11	6.6	12	1655	1.63E-11	6.5	13	1860	1.20E-11	5.4	24
1250	5.57E-11	5.9	24	1455	3.02E-11	5.6	13	1660	1.68E-11	5.9	12	1865	1.20E-11	5.2	24
1255	5.26E-11	5.4	24	1460	2.98E-11	5.7	13	1665	1.72E-11	5.8	13	1870	1.19E-11	4.9	24
1260	5.21E-11	5.6	24	1465	2.94E-11	5.6	24	1670	1.70E-11	5.1	24	1875	1.16E-11	5.6	24
1265	5.17E-11	5.6	24	1470	2.97E-11	5.1	24	1675	1.67E-11	5.0	24	1880	1.15E-11	5.6	24
1270	5.07E-11	5.9	24	1475	2.89E-11	5.5	24	1680	1.62E-11	5.0	24	1885	1.11E-11	5.9	24
1275	5.07E-11	5.6	24	1480	2.96E-11	4.5	24	1685	1.65E-11	5.7	24	1890	1.10E-11	5.8	24
1280	5.08E-11	5.7	24	1485	2.90E-11	4.8	24	1690	1.63E-11	5.4	24	1895	1.10E-11	4.9	24
1285	4.94E-11	5.8	24	1490	2.93E-11	4.9	24	1695	1.61E-11	5.9	24	1900	1.09E-11	5.4	24
1290	4.80E-11	5.9	24	1495	2.91E-11	4.5	24	1700	1.55E-11	5.4	24	1905	1.05E-11	5.7	21
1295	4.74E-11	5.0	24	1500	2.72E-11	4.5	24	1705	1.61E-11	5.1	24	1910	1.05E-11	6.0	17
1300	4.62E-11	5.0	24	1505	2.68E-11	4.5	24	1710	1.57E-11	5.3	24	1915	1.06E-11	5.4	13
1305	4.57E-11	5.1	24	1510	2.68E-11	4.5	24	1715	1.57E-11	4.8	24	1920	1.04E-11	5.9	24
1310	4.55E-11	5.3	24	1515	2.68E-11	6.0	24	1720	1.57E-11	5.5	24	1925	1.03E-11	6.0	24
1315	4.56E-11	5.3	23	1520	2.69E-11	6.0	24	1725	1.53E-11	5.0	24	1930	1.01E-11	6.5	24
1320	4.52E-11	5.5	21	1525	2.65E-11	6.0	24	1730	1.52E-11	5.9	24	1935	1.03E-11	6.8	24
1325	4.38E-11	5.0	24	1530	2.65E-11	6.3	24	1735	1.55E-11	5.7	24	1940	9.88E-12	5.6	24
1330	4.22E-11	5.8	24	1535	2.62E-11	6.5	24	1740	1.55E-11	5.8	24	1945	1.01E-11	5.8	24
1335	3.97E-11	5.8	24	1540	2.54E-11	6.2	24	1745	1.51E-11	4.8	24	1950	1.03E-11	7.0	24
1340	3.96E-11	5.0	24	1545	2.38E-11	6.4	24	1750	1.51E-11	4.4	24	1955	1.03E-11	6.0	24
1345	3.98E-11	5.9	24	1550	2.25E-11	5.1	24	1755	1.49E-11	4.1	24	1960	1.01E-11	5.1	23
1350	3.92E-11	4.2	24	1555	2.45E-11	6.3	24	1760	1.49E-11	4.5	24	1965	9.99E-12	6.2	23
1355	3.88E-11	3.8	24	1560	2.40E-11	4.8	24	1765	1.50E-11	3.8	24	1970	9.86E-12	8.6	23

LWR

LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.	LAMBDA	FLUX	SIGMA	NO.
1900	1.05E-11	14.5	13	2225	5.90E-12	8.4	13	2550	4.04E-12	3.1	13	2875	2.55E-12	6.2	13
1905	1.00E-11	6.4	13	2230	5.78E-12	7.2	13	2555	3.82E-12	3.1	13	2880	2.61E-12	6.7	10
1910	1.02E-11	9.3	13	2235	5.69E-12	5.1	13	2560	3.77E-12	4.4	13	2885	2.57E-12	7.3	7
1915	9.56E-12	9.0	13	2240	5.63E-12	7.1	13	2565	3.85E-12	4.4	13	2890	2.45E-12	5.6	7
1920	9.66E-12	7.8	13	2245	5.45E-12	6.4	13	2570	3.81E-12	5.2	7	2895	2.54E-12	5.9	7
1925	9.85E-12	6.9	13	2250	5.39E-12	9.2	13	2575	3.94E-12	5.3	6	2900	2.46E-12	5.9	7
1930	1.02E-11	7.9	13	2255	5.58E-12	6.9	13	2580	3.95E-12	6.0	6	2905	2.45E-12	4.8	7
1935	9.54E-12	7.0	13	2260	5.83E-12	6.5	13	2585	3.80E-12	6.0	6	2910	2.47E-12	3.8	7
1940	9.53E-12	7.4	13	2265	5.68E-12	6.5	13	2590	3.66E-12	2.0	6	2915	2.48E-12	4.9	7
1945	9.63E-12	8.4	13	2270	5.59E-12	10.5	13	2595	3.65E-12	6.0	6	2920	2.49E-12	5.2	14
1950	9.45E-12	6.5	11	2275	5.79E-12	8.7	13	2600	3.74E-12	8.0	8	2925	2.44E-12	6.5	13
1955	9.42E-12	10.0	8	2280	5.74E-12	4.7	13	2605	3.76E-12	5.3	11	2930	2.54E-12	5.8	13
1960	9.15E-12	7.8	8	2285	5.56E-12	6.1	13	2610	3.67E-12	5.4	11	2935	2.51E-12	6.8	13
1965	8.90E-12	7.7	8	2290	5.53E-12	6.5	13	2615	3.65E-12	5.5	13	2940	2.52E-12	6.8	13
1970	9.17E-12	6.6	8	2295	5.46E-12	6.5	13	2620	3.66E-12	5.3	13	2945	2.44E-12	6.9	13
1975	9.35E-12	6.6	8	2300	5.47E-12	8.3	13	2625	3.59E-12	4.0	13	2950	2.37E-12	8.0	13
1980	8.86E-12	8.8	11	2305	5.34E-12	6.2	13	2630	3.57E-12	4.0	13	2955	2.48E-12	6.2	13
1985	8.98E-12	6.8	11	2310	5.30E-12	6.5	13	2635	3.66E-12	3.7	13	2960	2.53E-12	7.0	13
1990	9.12E-12	4.4	11	2315	5.14E-12	6.2	13	2640	3.56E-12	4.7	13	2965	2.49E-12	7.8	13
1995	9.00E-12	4.8	11	2320	5.21E-12	6.5	13	2645	3.49E-12	4.2	13	2970	2.26E-12	5.5	13
2000	8.53E-12	4.2	13	2325	5.35E-12	6.0	13	2650	3.51E-12	5.8	13	2975	2.31E-12	4.5	13
2005	8.55E-12	4.8	13	2330	5.41E-12	5.3	13	2655	3.64E-12	5.4	13	2980	2.28E-12	5.7	13
2010	8.47E-12	4.8	13	2335	5.17E-12	5.8	13	2660	3.57E-12	5.5	13	2985	2.28E-12	6.6	13
2015	8.36E-12	4.5	13	2340	5.21E-12	6.8	13	2665	3.40E-12	4.2	13	2990	2.26E-12	5.8	13
2020	8.54E-12	5.3	13	2345	5.25E-12	6.8	13	2670	3.38E-12	4.4	13	2995	2.28E-12	8.8	13
2025	8.50E-12	8.8	13	2350	5.18E-12	6.8	13	2675	3.33E-12	5.1	13	3000	2.28E-12	8.8	13
2030	8.33E-12	9.2	13	2355	5.20E-12	6.9	13	2680	3.45E-12	6.1	8	3005	2.24E-12	9.6	13
2035	8.29E-12	6.7	13	2360	5.08E-12	6.8	13	2685	3.36E-12	4.5	8	3010	2.17E-12	7.9	13
2040	8.14E-12	6.4	13	2365	5.18E-12	6.6	13	2690	3.45E-12	4.5	8	3015	2.16E-12	7.0	13
2045	8.14E-12	5.4	13	2370	5.09E-12	6.6	13	2695	3.30E-12	5.9	8	3020	2.12E-12	7.0	13
2050	8.27E-12	5.1	13	2375	4.90E-12	5.6	13	2700	3.25E-12	4.0	8	3025	2.12E-12	7.8	13
2055	8.08E-12	7.1	9	2380	4.70E-12	6.8	13	2705	3.13E-12	4.5	8	3030	2.06E-12	6.9	13
2060	8.03E-12	7.4	9	2385	4.66E-12	5.8	13	2710	3.14E-12	4.6	13	3035	2.04E-12	7.1	13
2065	7.86E-12	4.8	10	2390	4.69E-12	5.6	13	2715	3.13E-12	5.3	13	3040	2.02E-12	6.0	13
2070	7.82E-12	4.9	10	2395	4.75E-12	6.3	13	2720	3.10E-12	6.7	13	3045	2.09E-12	7.0	13
2075	7.95E-12	6.9	10	2400	4.79E-12	5.2	13	2725	3.04E-12	6.0	13	3050	2.05E-12	7.6	13
2080	8.17E-12	5.7	13	2405	4.79E-12	5.3	13	2730	2.91E-12	5.0	13	3055	2.09E-12	8.6	13
2085	7.66E-12	4.9	13	2410	4.65E-12	6.5	13	2735	2.76E-12	6.0	13	3060	2.10E-12	7.8	13
2090	7.66E-12	6.5	13	2415	4.64E-12	6.4	13	2740	2.85E-12	4.5	13	3065	2.05E-12	6.7	13
2095	7.53E-12	5.0	13	2420	4.66E-12	6.2	13	2745	2.96E-12	3.9	13	3070	1.94E-12	9.8	13
2100	7.46E-12	6.2	13	2425	4.56E-12	6.1	13	2750	3.00E-12	4.0	13	3075	2.03E-12	9.3	13
2105	7.39E-12	5.1	13	2430	4.61E-12	5.5	13	2755	2.94E-12	4.1	13	3080	2.03E-12	7.4	13
2110	7.24E-12	5.5	13	2435	4.61E-12	5.4	13	2760	2.84E-12	5.0	13	3085	1.93E-12	9.5	13
2115	7.20E-12	6.5	13	2440	4.46E-12	4.8	13	2765	2.89E-12	6.8	13	3090	1.94E-12	11.5	13
2120	7.13E-12	6.4	13	2445	4.56E-12	4.0	13	2770	2.93E-12	4.0	13	3095	1.98E-12	11.8	13
2125	7.25E-12	9.5	13	2450	4.67E-12	5.9	13	2775	2.85E-12	4.8	13	3100	1.90E-12	11.7	13
2130	7.00E-12	4.4	13	2455	4.60E-12	5.7	13	2780	2.86E-12	4.9	13	3105	1.79E-12	11.5	13
2135	6.96E-12	5.5	13	2460	4.57E-12	5.9	13	2785	2.92E-12	7.9	13	3110	1.79E-12	12.6	13
2140	6.89E-12	4.3	13	2465	4.43E-12	5.9	13	2790	2.97E-12	4.9	13	3115	1.73E-12	11.4	13
2145	6.80E-12	4.4	13	2470	4.24E-12	6.1	13	2795	2.87E-12	5.7	13	3120	1.79E-12	12.4	13
2150	6.74E-12	4.0	7	2475	4.15E-12	5.7	13	2800	2.75E-12	5.6	13	3125	1.70E-12	13.0	13
2155	6.87E-12	6.5	7	2480	4.25E-12	5.4	13	2805	2.76E-12	5.5	13	3130	1.80E-12	14.5	13
2160	6.66E-12	6.5	7	2485	4.13E-12	5.5	13	2810	2.68E-12	6.5	13	3135	1.95E-12	12.8	13
2165	6.55E-12	5.5	7	2490	4.05E-12	5.4	13	2815	2.81E-12	6.5	13	3140	1.85E-12	13.0	13
2170	6.53E-12	4.8	7	2495	3.93E-12	4.6	13	2820	2.83E-12	6.5	13	3145	1.86E-12	12.0	13
2175	6.43E-12	4.5	7	2500	4.26E-12	4.4	13	2825	2.68E-12	6.3	13	3150	1.83E-12	20.8	13
2180	6.17E-12	4.8	7	2505	4.13E-12	4.7	13	2830	2.63E-12	5.0	13	3155	1.79E-12	20.0	13
2185	6.30E-12	6.7	7	2510	3.75E-12	4.1	13	2835	2.68E-12	5.7	13	3160	1.79E-12	17.4	13
2190	6.22E-12	6.7	9	2515	3.71E-12	4.6	13	2840	2.73E-12	5.3	13	3165	1.67E-12	15.0	13
2195	6.25E-12	12.0	13	2520	3.85E-12	5.5	13	2845	2.71E-12	5.5	13	3170	1.72E-12	20.3	13
2200	6.05E-12	8.8	13	2525	3.95E-12	4.1	13	2850	2.69E-12	5.8	13	3175	1.70E-12	15.0	13
2205	6.05E-12	8.3	13	2530	4.02E-12	4.6	13	2855	2.64E-12	5.5	13	3180	1.88E-12	11.9	13
2210	6.00E-12	9.0	13	2535	3.99E-12	4.1	13	2860	2.70E-12	4.7	13	3185	1.81E-12	11.9	13
2215	6.03E-12	9.0	13	2540	3.98E-12	3.6	13	2865	2.59E-12	7.0	13	3190	[illegible]	13.9	13
2220	6.11E-12	8.2	13	2545	3.98E-12	3.2	13	2870	2.53E-12	7.2	13	3195	1.61E-12	26.3	13

TABLE 3
ZERO EPOCH IUE ABSOLUTE CALIBRATION FOR THE SWP CAMERA

λ (Å)	Corr.[a]	S^{-1} (L-A_p)[b] (10^{-14} erg cm^{-2} $Å^{-1}$ FN^{-1})	S/L[c]	T/L[d]
1150	1.024	20.2:	.970	1.069
1175	1.018	7.78:	.977	1.050
1200	1.014	4.28:	.983	1.034
1225	1.010	2.89:	.989	1.019
1250	1.007	2.39	.995	1.005
1275	1.005	2.23	.999	.997
1300	1.004	2.17	1.002	.991
1325	1.003	2.18	1.005	.990
1350	1.002	2.26	1.008	.991
1375	1.000	2.40	1.011	.996
1400	.999	2.60	1.014	1.002
1425	.998	2.81	1.016	1.007
1450	.998	3.05	1.017	1.012
1475	.997	3.31	1.018	1.018
1500	.997	3.55	1.019	1.027
1525	.997	3.75	1.018	1.036
1550	.997	3.85	1.018	1.048
1575	.998	3.71	1.017	1.051
1600	.998	3.51	1.016	1.052
1625	.999	3.32	1.015	1.053
1650	.999	3.12	1.013	1.052
1675	1.000	2.92	1.011	1.049
1700	1.001	2.73	1.008	1.042
1725	1.003	2.53	1.005	1.035
1750	1.004	2.35	1.002	1.030
1775	1.005	2.19	.999	1.028
1800	1.007	2.09	.995	1.027
1825	1.009	2.04	.990	1.028
1850	1.012	2.02	.984	1.028
1875	1.014	2.01	.978	1.027
1900	1.017	2.00	.972	1.026
1925	1.019	1.98	.966	1.024
1950	1.022	1.98	.960	1.022
1975	1.026	1.95	.954	1.020

TABLE 4
ZERO EPOCH IUE ABSOLUTE CALIBRATION FOR THE LWR CAMERA

λ (Å)	Corr.[a]	S^{-1} (L-Ap)[b] (10^{-14} erg cm^{-2} Å^{-1} FN^{-1})	S/L[c]	T/L[d]
1850	.953	15.1	1.113	1.048
1900	.964	5.08	1.063	1.036
1950	.978	2.85	1.024	1.029
2000	.988	1.90	.998	1.024
2050	.994	1.63	.981	1.020
2100	.998	1.50	.973	1.017
2150	.999	1.47	.971	1.013
2200	.999	1.40	.971	1.010
2250	.999	1.20	.971	1.007
2300	.998	1.00	.973	1.003
2350	.993	.828	.986	1.000
2400	.986	.705	1.002	1.000
2450	.980	.593	1.021	1.000
2500	.975	.516	1.032	1.000
2550	.973	.457	1.040	1.000
2600	.970	.414	1.047	1.003
2650	.968	.378	1.050	1.006
2700	.968	.350	1.052	1.010
2750	.969	.341	1.048	1.013
2800	.971	.339	1.042	1.017
2850	.974	.347	1.036	1.020
2900	.976	.375	1.030	1.024
2950	.979	.421	1.022	1.028
3000	.982	.493	1.014	1.032
3050	.987	.612	1.000	1.038
3100	1.010	.843	.956	1.038
3150	1.057	1.22:	.825	1.036
3200	1.105	1.90:	.735	1.034
3250	1.126	3.38:	.686	1.032
3300	1.130	7.09:	.642	1.030
3350	1.130	15.0:	.614	1.028

NOTES TO TABLES 3 AND 4

[a] Correction to the Bohlin and Holm (1980) calibration S^{-1} (1980), such that the new calibration for point sources centered in the large aperture in the next column is

$$S^{-1}(\text{L-Ap}) = S^{-1}(1980)/\text{Corr}.$$

[b] IUE inverse sensitivities for a point source centered in the large aperture. The stellar flux $F(\lambda)$ in erg cm^{-2} s^{-1} Å^{-1} is

$$F(\lambda) = S^{-1}(\lambda)\,\frac{FN(\lambda)}{t},$$

where $FN(\lambda)$ is the linearized IUE response in Flux Numbers and t is the exposure time in seconds.

[c] Ratio of small aperture response to the large aperture response for point sources. Since the IUE small aperture is not a photometric aperture, the average of S/L over all wavelengths is normalized to unity. The relative small and absolute large aperture inverse sensitivities are related by

$$S^{-1}(\text{S-Ap}) = S^{-1}(\text{L-Ap})/(S/L).$$

[d] Ratio of trailed response to point sources in the large aperture. The absolute calibrations are related by

$$S^{-1}(\text{Trail}) = S^{-1}(\text{L-Ap})/(T/L).$$

The values of T/L are for trailed exposure times computed using lengths for the large apertures of 21.4 arcsec for SWP and 20.5 arcsec for LWR (Panek 1982).

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FIGURE CAPTIONS

FIG. 1--IUE (*filled circles*) and ground-based fluxes (*open circles*) from Stone (1977) for BD+28°4211. IUE data from the first year of operations for 7 large and 6 small aperture spectra have been combined in 5 Å bins. The rms scatter of independent observations is shown for the Stone data and as the outer error bar for IUE. The inner error bars shown for the sample IUE points are estimates of the error in the mean, computed by reducing the rms error by the square root of the 13 independent observations. The solid line is the Planck function for $T = 120{,}100$ K derived from a fit to the IUE data.

FIG. 2--The data for BD+33°2642 presented as in Figure 1. IUE data are combined for 7 large and 4 small aperture spectra, while the blackbody fit is for $T = 26{,}400$ K.

FIG. 3--IUE (*filled circles*) and Voyager fluxes (*open circles*) from Holberg (1985) for BD+28°4211. The IUE data is the average of 12 large and 12 small aperture spectra in 5 Å bins. Typical error bars due to counting statistics are shown for Voyager, while the IUE error bars represent the expected error in the average spectrum. Some spectral absorption lines are identified.

FIG. 4--The data for BD+75°325 presented as in Figure 3. IUE data are from 7 large and 6 small aperture spectra.

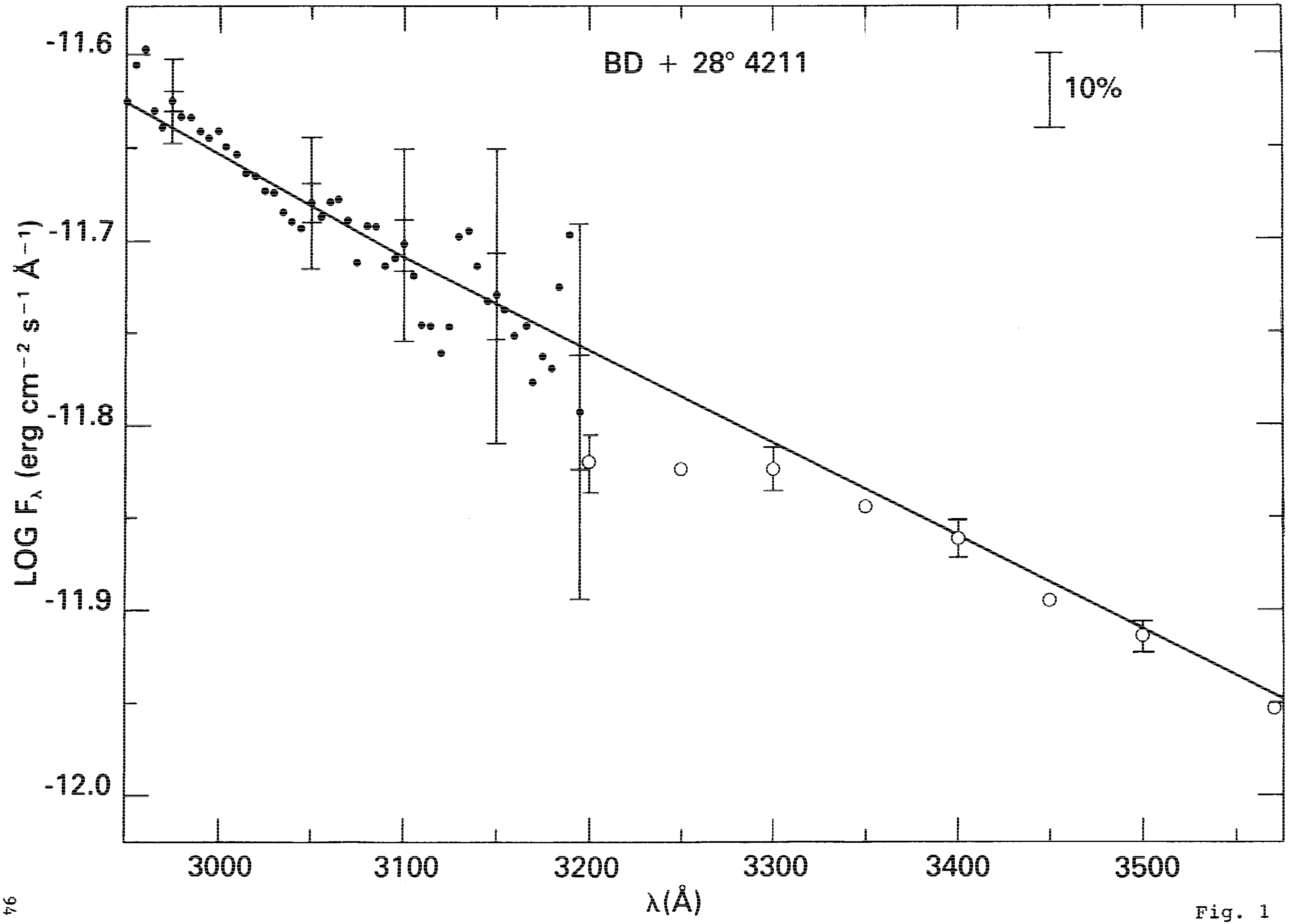
BD + 28° 4211
10%
LOG F_λ (erg cm^{-2} s^{-1} Å^{-1})
-11.6
-11.7
-11.8
-11.9
-12.0
3000
3100
3200
3300
3400
3500
λ(Å)

Fig. 1

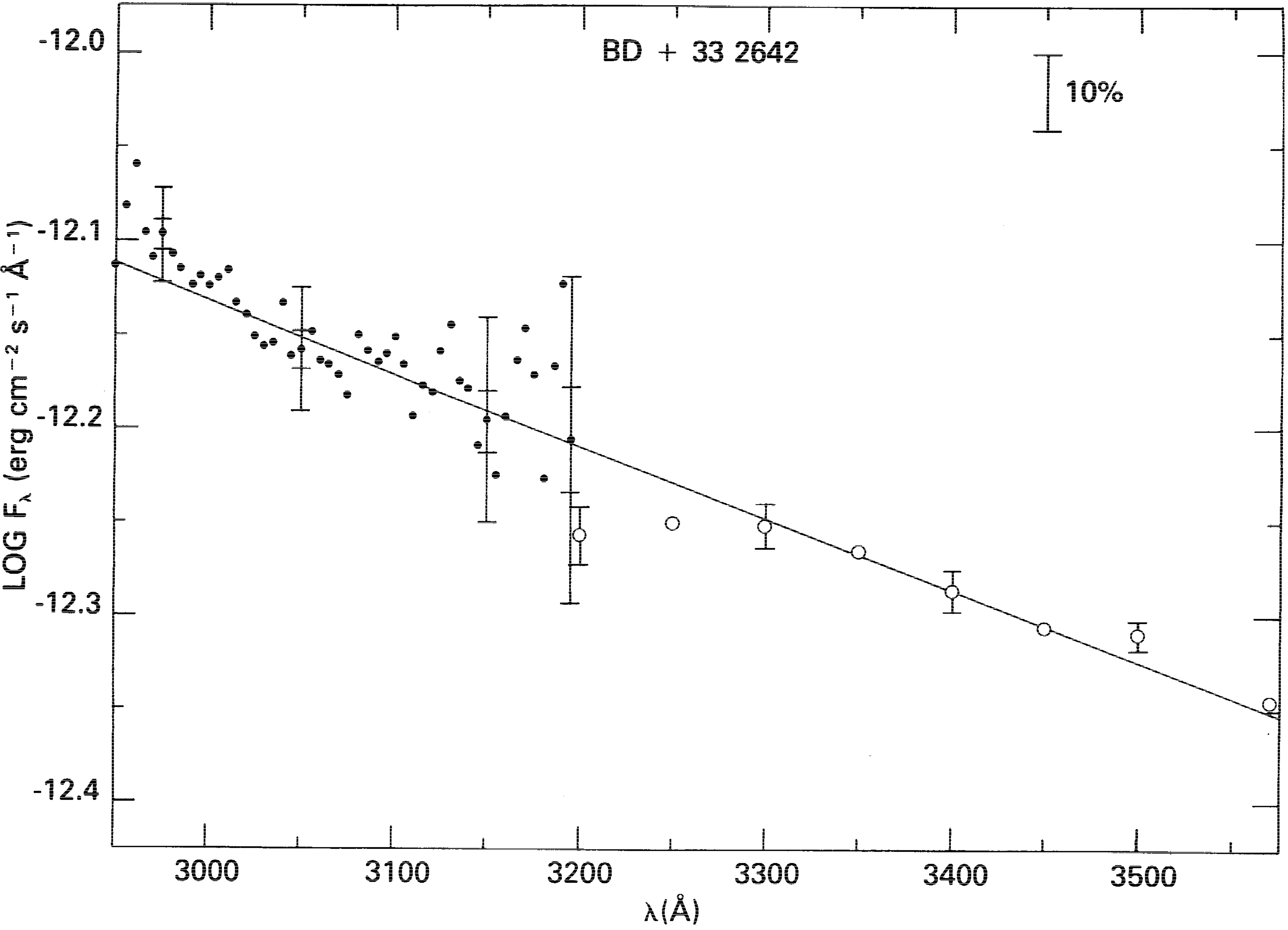
BD + 33 2642
10%
LOG F$_\lambda$ (erg cm^{-2} s^{-1} Å^{-1})
-12.0
-12.1
-12.2
-12.3
-12.4
3000
3100
3200
3300
3400
3500
λ(Å)

Fig. 2

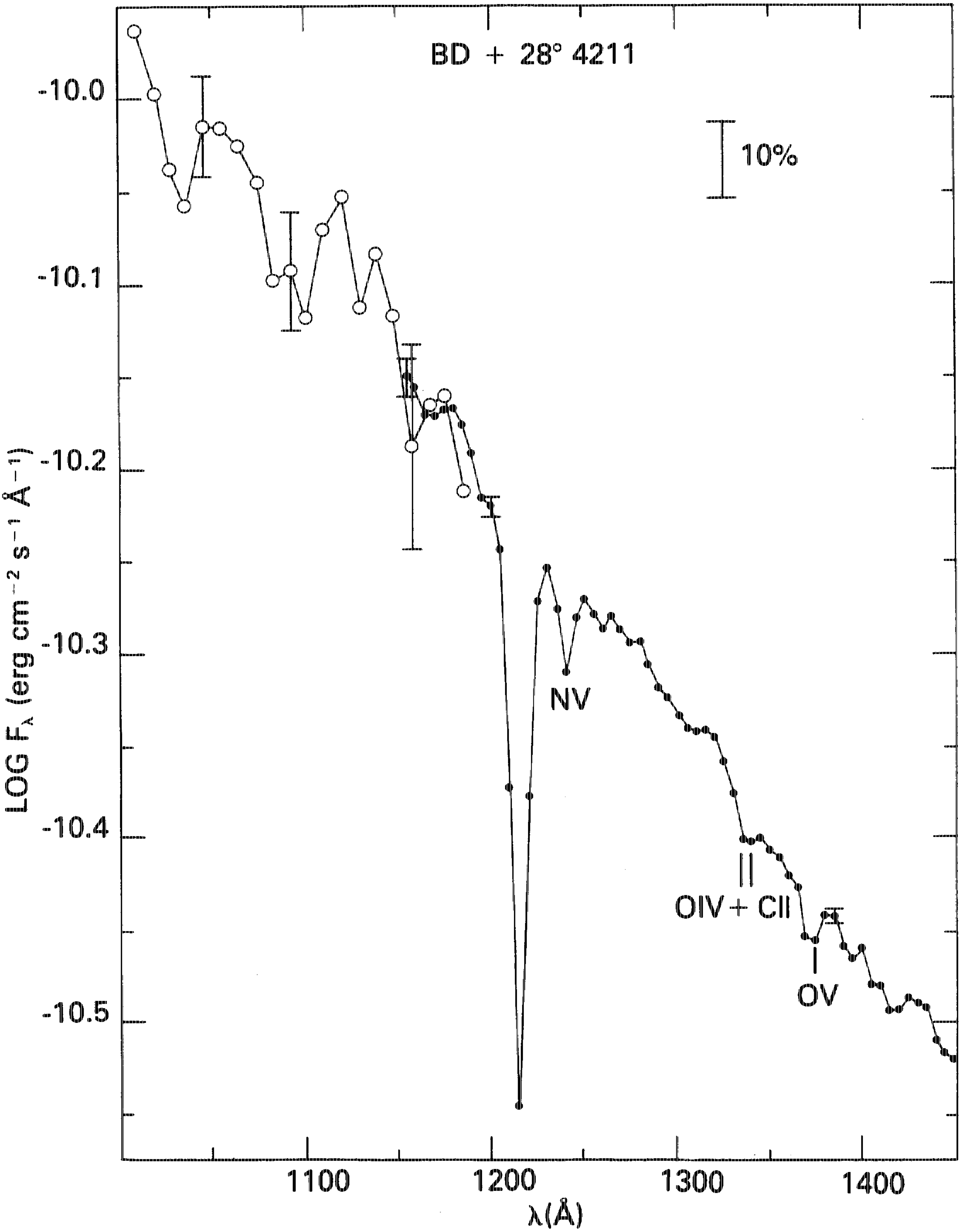
BD + 28° 4211
10%
LOG F$_\lambda$ (erg cm^{-2} s^{-1} Å^{-1})
-10.0
-10.1
-10.2
-10.3
-10.4
-10.5
NV
OIV + CII
OV
1100
1200
1300
1400
λ(Å)

Fig. 3

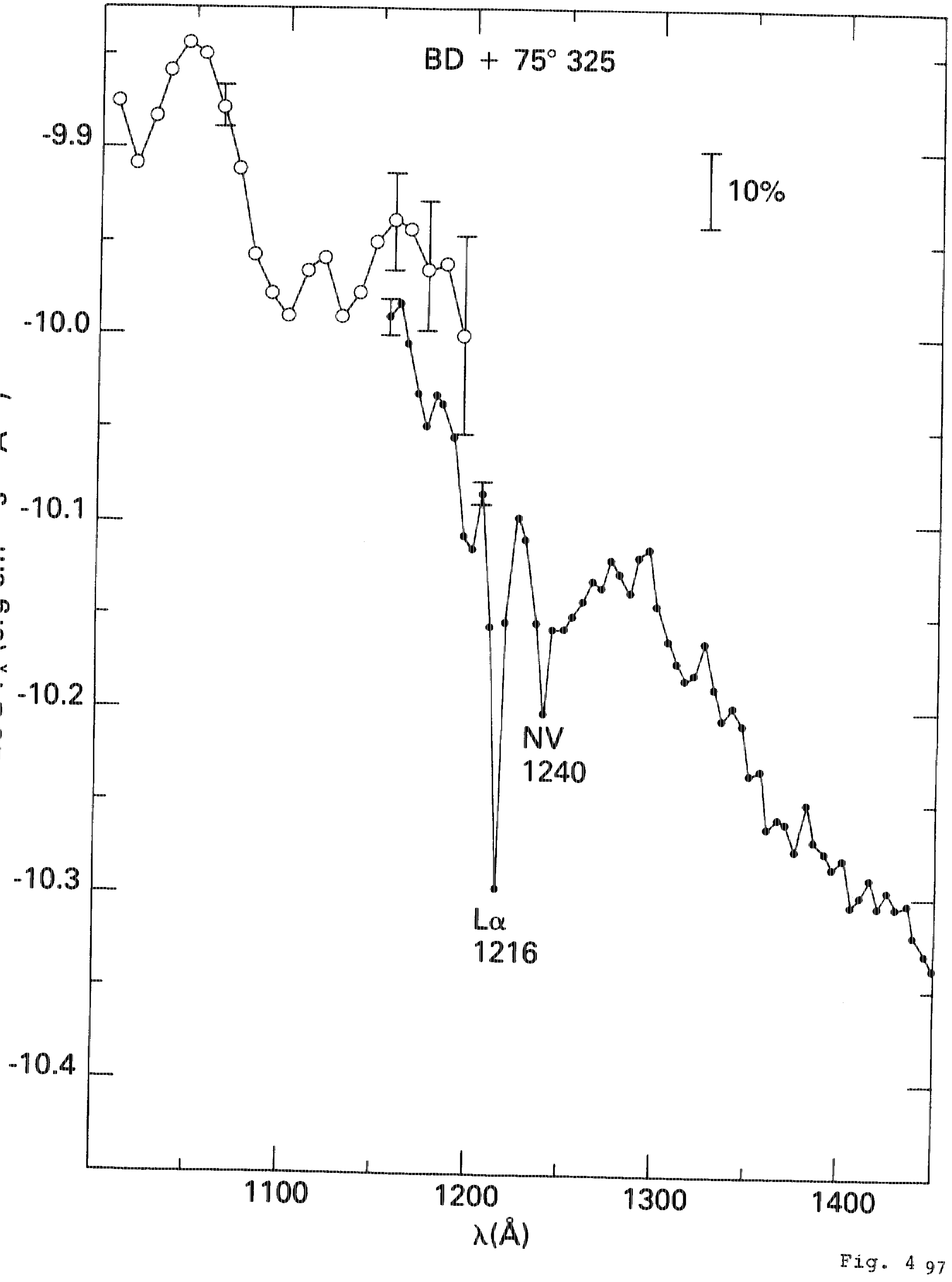
BD + 75° 325
10%
-9.9
-10.0
-10.1
-10.2
-10.3
-10.4
LOG F$_\lambda$ (erg cm^{-2} s^{-1} Å^{-1})
NV
1240
Lα
1216
1100
1200
1300
1400
λ(Å)

Fig. 4