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An inhomogeneous reference catalogue of identified intervening heavy element systems in spectra of QSOs

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SUMMARY

Identifications of heavy element line systems, observed in spectra of quasi-stellar objects beween 1965 and 1989 inclusive, are collected and tabulated with references. Each system is assigned a quality grade based on the apparent reliability of the data. The highest quality systems are used to characterize the absorbers as a sample. We confirm a decrease in C IV line strength with redshift (z), and the corresponding decrease in line density per unit z with z. The weakest C IV systems, at high z, are accompanied by relatively stronger Si IV lines, compared to the relative line strengths at low z. The space density of systems with strong lines of first ions is nearly independent of z below $z=3$, though it drops at $z>3$. Preliminary tests for quasar lensing by intervening systems and for clustering of absorbers on large scales are presented.

1 INTRODUCTION

A saturated Ly α λ1216 absorption line can be produced by less than $10^{-6}\,M_\odot$ of neutral hydrogen.¶ Because of this sensitivity of absorption line spectroscopy to the presence of gas intervening between us and a distant quasi-stellar object (QSO), absorption lines should provide fundamental information about the distribution of matter and, hence, about the phenomena of galaxy and star formation at epochs from the present (redshift $z\sim0$) to the epoch of the most distant QSOs ($z_{em}>4.5$). For objects at $z_{abs}<2$, there is some chance of direct detection of the absorbing objects in emission (Yanny, York & Williams 1990). For the more distant epochs ($z_{abs}>2$), emission from small groups of stars and the associated gas is difficult to observe directly, and QSO absorption line studies provide unique, direct information about the composition, density and temperature of distant interstellar media.

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¶A spherical cloud of density n particles cm^{-3} has a mass $M\sim 2\times10^{-58}\,N^3/n^2\,M_\odot$. For a saturated Ly α line, $N>10^{14}$ cm^{-2}, and any place in the Universe with neutral hydrogen has $n>10^{-5}$ cm^{-3}, so $M<10^{-6}\,M_\odot$.

The absorption line phenomenon in QSO spectra was reviewed by Weymann, Carswell & Smith (1981), its possible relationship to haloes of galaxies was reviewed by York (1982), and numerous papers on different aspects of the phenomenon are collected in Blades, Turnshek & Norman (1988). In studying the absorption lines at all redshifts, the incompleteness in redshift coverage is most apparent at low redshifts, requiring observations at $\lambda<3000$ Å. Bergeron, Savage & Green (1987) have reviewed what little is known from this spectral region.

The known absorption line systems provide a search list for different observing programmes. For instance, abundances can best be determined in systems with damped Ly α lines, since N(H I) is then available for comparison with column densities of heavy elements. Since the hydrogen line strengths are not always available in the literature, a secondary selection can be made on those systems with strong lines of first ions of heavy elements, an item of information available in this catalogue. As a second example, the absorbers serve as signposts that a galaxy of some type exists at the absorber redshift, z_{abs}, which may aid in investigations of the nature of the galaxy. Yanny *et al.* (1990), selecting Mg II systems for a search of [O II] emission, found a subset for which the emission would not overlap known night sky emission lines. Even though there are numerous absorber systems now in the literature, the list of candidate objects for such a specific search is small, and a complete listing of all known systems is an essential aid in planning observing programmes. Once one is ready to commit to a long telescope search, it is essential to know that each system chosen for study has been reliably identified, so some evaluation of quality is important in any such tabulation.

We have catalogued the known systems, to aid in selecting systems for such studies. We have searched the literature for systems with absorption lines of heavy elements that are likely to be intervening systems, unrelated to the QSO itself. The broad absorption line systems (Hazard *et al.* 1984) are not tabulated here, nor are the thousands of Ly α-only systems which make up, in large part, the forest of lines shortward of Ly α emission in all quasar spectra studied in such a way as to observe the phenomenon (Tytler 1987; Hunstead 1988; Pettini *et al.* 1991). The damped Ly α systems described by Smith, Cohen & Bradley (1986) are not specially treated, and only appear here if they meet the other criteria set out below. The Lyman limit absorption systems have not been noted or specially treated here (Bechtold *et al.* 1984; Sargent, Steidel & Boksenberg 1989) nor have the few cases of H I 21-cm absorption (Briggs & Wolfe 1983; Brown *et al.* 1988).

The heavy element systems are easiest to identify by looking longward of QSO Ly α emission. The most commonly recognized lines are those of the redshifted C IV $\lambda\lambda$1548, 1550 doublets. At longer wavelengths, redshifted Mg II $\lambda\lambda$2796, 2803 doublets are the easiest lines to identify. The ubiquitous presence of the C IV and Mg II doublets has led to loosely defining two types of heavy element line systems, namely high-ionization and low-ionization systems, respectively. In many cases, however, both high- and low-ionization species are seen at nearly identical redshifts in the same QSO spectrum, and classification of a system at either high or low ionization is often an artefact of limited spectral coverage. This classification should be done using species with lines observed near each other, such as C IV and Si II ($\lambda\lambda$1526, 1533), a job that can be done with this catalogue.

2 THE CATALOGUE

2.1 Literature search and basic data formats

Various groups have obtained absorption spectra of quasars with differing spectral resolution, spectral coverage, and signal-to-noise ratio. Ellis & Phillips (1978) and Perry, Burbidge & Burbidge (1978) collected these observations into early catalogues. Hewitt & Burbidge (1987, 1989) have compiled a catalogue of all known quasars, listing known absorption redshifts and references, but do not provide any information on lines identified, equivalent widths, or reality of a system. We started with a computer tape kindly supplied by R. Ellis in 1980, and searched the literature for systems through 1988 for additional systems. Then we cross-checked with the Hewitt & Burbidge (1987) catalogue to include systems listed by them. Finally, the literature was reviewed through 1989 for more systems. The present catalogue includes detailed information on spectral coverage, species identified, equivalent width, detection limits, resolution, and reliability of the resulting system identification, all gleaned from the original sources.

Data were taken from papers published from 1965 through 1989 in the following journals: *Astronomical Journal, Astronomy and Astrophysics, Astronomy and Astrophysics Supplements, Astrophysical Journal, Astrophysical Journal Supplements, Monthly Notices of the Royal Astronomical Society, Nature, Proceedings of the Astronomical Society of Australia, Publications of the Astronomical Society of the Pacific*, with a few papers from other journals.

Not every absorption line seen in a QSO spectrum has been identified. As many as 20 per cent of the (usually weaker) lines longward of Ly emission remain unidentified in recent surveys (Sargent, Boksenberg & Steidel 1988). Our catalogue lists only lines identified by the authors who made the original observations, an identification being possible, in general, if two or (preferably) more lines can be identified with common lines of neutral or ionized atoms at the same redshift (within observational error).

The raw format of the catalogue (not shown here, but available to interested researchers), consists of the following information. For each QSO, the name, emission redshift, and V magnitude are tabulated. For each absorption line system, the tabulation includes the absorption redshift, literature reference, system equivalent width detection limit (1σ), lowest and highest wavelength observed, grade of the system (A, B, or C) as described below, spectral resolution of the observation, and type of system (high ionization, low ionization, duplicate, Galactic, or no system) as described below. For each identified line in each absorption system, the catalogue lists the observed wavelength of the line, observed equivalent width, error on the equivalent width, identification of the line, and a flag if the line is part of a blended set of lines. All lines lying in the Lyman α forest are flagged, as they are all potentially blended with Lyman α lines.

The detection limits cited in the original literature were used in placing equivalent width limits on lines scanned but not detected. When such information was unavailable, the values were derived by us, taking into account the detector system (CCD, photon counter, photographic plate) and the detected signal levels for each line.

Supplemental to this raw format are tables of references [each reference to the literature indicates whether air or vacuum wavelengths were used by the authors ($\lambda_{vac} \sim 1.000277\lambda_{air}$)], rest wavelengths of resonance lines of common species (Morton, York & Jenkins 1988), selected line codes, and night sky lines. The latter are used in searching for systems to put in observing programmes, to be sure night sky lines, absorption or emission, are avoided.

2.2 Grading criteria

Because of the inhomogeneous nature of the catalogue, each system was assigned a grade based on the following criteria: if a C IV or Mg II doublet was observed with the correct doublet ratio ($2 \gtrsim DR \gtrsim 1$), the system was assigned a grade of 'B'. If, in addition, plausible lines of another species (besides H I λ1216) were identified and supported this doublet, the grade assigned as 'A'. If the doublet ratio was inverted, or only one member of a doublet was identified, or, if a spectrum was pictured in the reference and the lines did not appear at all convincing, or the data was of especially poor resolution or of poor signal-to-noise, then the grade assigned was 'C'. In a number of cases the judgement made may be considered somewhat arbitrary; however, having the grades assigned by one person within a short timespan of several months hopefully makes the assignments relatively consistent throughout the data set. In some cases, different authors find the same systems, of course. These appear in the raw data version of the catalogue as duplicates. Some duplicate systems, especially from older data, have been superceded by more recent data of higher quality, and these are removed from the final version. Other duplicate systems, if they offer different spectral coverage, or different line identifications, are left in the final catalogue, but are removed before any analysis, in the form of graphs, is made. When a duplicate system is retained, it is labelled 'D' after the grade in the main catalogue (Table 1).

2.3 Tables

Table 1 (Microfiche MN250/1) presents the known absorbers in redshift order. The first five columns give absorber redshift, QSO name, beta (an indication of the difference between quasar emission redshift and absorption redshift in units of v/c), literature reference, and grade. The name of the QSO is in HHMMSDDFE format where HHMM is the right ascension (hours and minutes) of the QSO, for the epoch 1950; S is the sign of the declination; and DDF is degrees and fraction (10ths of a degree) of the 1950 QSO declination. E is an optional extra symbol, such as A or B, to distinguish between two nearby quasars. The exact coordinates, and the finding charts can be found by referencing the listed papers, or by referring to Hewitt & Burbidge 1987, 1989.

Then, for nine heavy element species, the rest frame equivalent widths of 15 transitions are listed, in Å, with an error code ('a' through 'x'). If no numerical equivalent width is given, then a strength code ('S1' through 'S5') is listed. If no strength code is indicated in the original reference, but the line was detected, then 'S0' is listed. The error code translates to 1σ errors on rest frame equivalent width as indicated in the footnotes to Table 1. If a line was not detected, but could have been detected if present at a certain level (as indicated by wavelength coverage for that observer), then an error code, indicating a 1σ upper limit to the equivalent width is listed.

A dagger indicates that a detected line is in the Ly α forest for that QSO, in which case both the identification and the actual value of the equivalent width are suspect, owing to possible blending or confusion with Ly lines at other redshifts. A 'B' in front of the equivalent width means that this line is blended with another line and the quoted equivalent width is an upper limit.

Several of the most frequently occurring species in absorbers are listed in the main catalogue (Table 1), presented in a format that allows convenient comparison. Thus, the readily observable carbon ions, C II and C IV, are listed in adjacent columns so that the ionization state of each system can be readily judged. The silicon ions are listed next, but Si IV is listed first for easy comparison with C IV, since the ratio of these ions is different in different theories of ionization of the absorption line systems. Following Si II, other first ions are tabulated (Al II, Fe II and Mg II), as intercomparison of these species may show interesting abundance effects, not much affected by the radiation field. Mg I is listed next to Mg II for sorting out effects of the radiation field near 1100 Å, the ionization edge of Mg I. Finally, several additional iron lines are listed, as comparison of these with the previously listed transition of Fe II shows the degree of saturation in the system lines.

Table 2 (Microfiche 250/1) presents the less common species that have been noted in the heavy element systems listed in Table 1, sorted by redshift. The Ly α lines, when noted by the original authors, are included here instead of in Table 1, even though they represent the most commonly occurring species. This decision was made because all the lines are in the Ly α forest and are often blended, so it is impossible to tell the strength attributable to a given system. The fact that Lyman α is not reported in cases where it could have been seen prompted us to check all systems for Lyman α. This search was made for a previous version of the catalogue, about 60 per cent the size of this one. In all cases where Lyman α should lie in an observed region of the spectrum for a given QSO, it is either present or there is a large absorption feature that encompasses the predicted wavelength, probably a blend which includes the Lyman α line.

Table 2 includes observations of Ca II and Na I observed at local redshifts ($z \sim 0$) due to gas within the Galaxy. Entries in Table 2 are absorption redshift, quasar, reference, grade, equivalent width and line identification. Footnotes are the same as for Table 1.

Table 3 presents a listing of all absorption systems identified, sorted by QSO RA, with grades and most recent reference to the literature (Lref). This table is useful as a finding list for all systems previously observed in a given quasar. This table is also a source for V magnitudes and emission line redshifts of the QSOs, mostly taken from Hewitt & Burbidge (1987, 1989). In a few cases, these must be traced through the references to the absorption line work in Table 1, though these will eventually appear in updates to the Hewitt & Burbidge catalogues. While QSOs are variable, it is generally adequate, for observing purposes, to use the one magnitude given by Hewitt & Burbidge. Less than 10 per cent of QSOs vary by more than 30 per cent over 4 yr (Huang, Mitchell & Usher 1990), though, for UV studies, variability may be a more important problem for observers (Kinney *et al.* 1991).

2.4 Coverage maps

Fig. 1 presents wavelength coverage maps for each QSO observed. The average resolution at which the observations were made is listed to the right of the QSO name. Low- and high-wavelength-coverage points are marked. If several authors observed the QSO, the low- and high-coverage points may overlap. A 'C' or an 'M' marks an observed C IV or Mg II system, respectively. Only systems of grade A or B are included.

3 GRAPHICAL CHARACTERIZATION OF THE SAMPLE

3.1 Equivalent width distribution

Figs 2 and 3 show the rest frame equivalent width distribution for, respectively, C IV and Mg II doublets with numerical equivalent widths of grade A or B with beta $\geqslant 0.05$. Duplicates have been removed and blended lines excluded.

Table 3. Redshifts of absorption line systems in each QSO.

QSO	z_{em}	V	Lref	z_{abs}										
0000 − 263	4.104	18	214	3.3897A	3.5363C	4.1324A								
0000 − 398	2.83	18.8	111	2.3985C	2.5167A									
0001 + 087	3.243	18.5	209	1.0842B	1.4156B	2.7206C	2.9996A							
0002 + 051	1.899	16.2	157	1.7444A										
0002 − 422	2.758	17.21	206	0.8366A	1.5417B	1.9886A	2.1683A	2.3022B	2.4641A					
0004 + 171	2.890	18.5	209	0.8068B	2.5180A	2.8705C								
0013 − 004	2.086	17	207	0.4466C	1.5610B	1.7129A	1.7529C	1.9666A	1.9697A	1.9750A	1.9909B	2.0282A		
0014 + 813	3.38	16.5	207	1.1109A	1.1127A	2.4932B	2.7980C	2.8004A	2.8086C	3.2266A				
0017 + 154	2.012	18.2	67	1.3636C	1.6250A	1.8723C								
0018 + 007	1.820	18.1	198	1.328A	1.577A									
0019 + 011	2.134	18.9	131	2.103B										
0024 + 224	1.118	16.6	130	1.109C										
0029 + 002	2.222	18.0	26	1.266C	1.7339A	1.9990A	2.0088A	2.0257A						
0029 + 073	3.259	17.7	209	1.1759B	1.4035B	2.4376B	2.7982C	2.8734B	2.904B					
0029 − 414	0.896	17.8	162	0.778B										
0041 − 266	3.045	—	214	0.8626B	2.2659B	2.3392B	2.7413B	2.7576B						
0042 − 264	3.298	18.5	214	2.4758B	3.1466B	3.2374B	3.2921B							
0045 − 036	3.135	19.0	209	2.3641B	2.4810B	2.6419C	2.8151B							
0046 − 315	2.721	17.70	206	1.3138B										
0049 + 014	2.31	17	201	1.831B										
0051 + 291	1.83	17.8	199	0.0002C	0.8464A	0.8466A	1.4314B	1.8293C						
0054 − 284	3.616	18.70	209	1.3412B	1.4398B	3.2791C	3.5800B							
0055 − 269	3.653	18.3	214	1.5335A	2.9494B	3.1910A	3.1943B	3.6013B						
0056 + 126	1.088	18.0	55	1.058B										
0058 + 019	1.96	17.16	207	0.6128A	1.2106C	1.245C	1.261C	1.4636A						
0058 − 270	1.889	19.2	188	1.80B	1.83C	1.87B								
0100 + 130	2.681	16.57	152	1.7193C	1.797B	2.0718C	2.1078C	2.2062B	2.2256C	2.3085B	2.5432C	2.5511C	2.6194C	2.6631C
0101 − 304	3.150	18.6	209	1.2560A	3.1360B									
0102 − 190	3.035	18.2	209	1.0262B	2.8438B	2.9277B	2.9724B							
0109 + 200	0.746	17.0	139	0.5347B										
0112 + 030	2.81	18.6	209	1.0201B	1.2453A	2.1498C	2.4224A							
0114 − 089	3.20	17.4	213	2.2995B	2.5390A	3.1053A	3.1055B							
0118 − 031B	2.11	19.0	194	1.4652A	2.0200A									
0119 − 046	1.937	16.8	158	0.6577B	0.7199B	1.6512B	1.7403A	1.9644A	1.9724A	1.9751A				
0122 − 380	2.181	16.5	154	1.8148B	1.9106A	1.9127B	1.9643C	1.9699B	1.9739A	1.9795C				
0123 + 257	2.358	17.5	67	1.8606C	2.0018C	2.0231C	2.0384C	2.1801C	2.2438C	2.2673C	2.2687C	2.2760C	2.2930C	2.3003C
				2.3426C	2.3463C	2.3476C	2.3689A	2.3701B						
0128 − 367	2.164	18.3	183	2.126C										
0130 − 403	3.015	17.5	111	2.5588B										
0132 − 198	3.130	18.3	209	1.3781A	2.3880A									
0135 − 400	1.850	—	143	1.6216B	1.761B	1.7830B	1.8311B	1.8581B	1.8607B					
0138 − 381	2.874	17	111	2.6512A										
0142 − 100	2.73	17.0	207	1.9405A	1.9416B	1.9443B	2.3246B	2.3561A						
0143 − 015	3.138	17.8	209	1.0383B	1.2853B	1.5794B	1.6126C							
0146 + 017	2.905	18	209	1.1292B	1.6868B									
0148 − 097	2.848	18.9	209	1.3855C	2.1030B	2.5564B	2.6320B							
0150 − 202	2.15	17.1	207	0.3882C	0.3892C	0.7800B	1.7666B	1.9287B	2.0083B	2.0099A				
0151 + 048	1.90	17.63	207	1.4680B	1.5613A	1.6188A	1.6537A	1.6558A	1.6581B	1.6601A	1.8266B	1.9342A		
0153 + 045	2.99	18.0	213	2.2413B	2.4002A	2.4074B	2.4243B	2.5309B	2.8328B					
0201 + 365	2.912	18.1	209	1.2956B	1.3012B	2.3260B	2.4241B	2.4600B	2.5543B	2.8056B				
0207 − 003	2.85	17.7	209	1.0436A	1.0445A	1.1465C	2.5222A	2.5734A	2.5906B					
0207 − 398	2.81	17	111	2.4787A										
0215 + 015	1.72	18.33	196	0.0000B	1.254B	1.345A	1.491B	1.549B	1.649A	1.68551B				
0216 + 080	3.00	18.1	209	1.5103B	1.7690B	2.2821B	2.2930A	2.3361B	2.7205B					
0226 − 038	2.06	16.96	207	1.3281B	2.0435A									
0229 + 131	2.07	17.71	207	0.3722B	0.4176A	1.4698C	1.8605B	1.8622A	1.9024A	1.9581C				
0232 − 042	1.44	16.46	144	1.425C										
0235 + 164	0.95	17	88	0.0000B	0.5242A	0.851B								
0237 − 233	2.22	16.63	207	1.3651A	1.4216C	1.6367C	1.6575A	1.6723A	1.8996C	1.9560C	2.1764C	2.2028A		
0239 − 154	2.782	18.9	209	0.8379B	0.9060C	0.9530B	1.3036B	2.4691B						
0249 − 184	3.205	18.6	209	1.2878A	2.2618C	2.6410B								
0249 − 222	3.202	18.1	209	2.6735B	3.1036A	3.1294C								
0254 − 3342	1.864	16.0	155	0.213B	1.732A	1.808B	1.815B	1.8265A	1.8322A	1.8374A	1.856B			
0254 − 334R	1.913	17.0	155	0.213C										
0254 − 404	2.29	17.4	208	0.5505A	1.2844A									
0256 − 000	3.370	18.7	214	1.0250B	1.1983A	1.2773C								
0301 − 005	3.223	18.2	209	2.4292B	2.4700B	2.7241A	2.9406B							
0302 + 171	2.883	19	209	2.8225B										
0302 − 003	3.29	18.37	213	2.5900C	2.6894C	2.9647C	3.2205C							

Table 3 – *continued*

QSO	z_{em}	V	Lref	z_{abs}										
0307 – 195A	2.14	18.6	170	1.5264A	1.7040A	2.0353B	2.0919C	2.1228A						
0307 – 195B	2.12	19.1	170	1.7886A	2.0322A	2.1219A								
0316 – 203	2.865	19	209	0.9942B	1.1083B	1.3289B	1.4026B	2.1330B	2.5245C	2.9035C				
0324 – 407	3.056	18.0	111	2.4346B	2.4381B	2.8064B	2.9326B							
0329 – 255	2.69	17.51	207	2.4540A										
0334 – 204	3.130	18.3	209	1.1174B	1.4892C	2.1777C	2.8917B	3.0432B	3.0917B					
0347 – 383	3.222	17.3	214	1.4573A	1.5263A	2.3852B	2.5706B	2.6512A	2.8103B	2.8487B	3.0252A			
0348 + 061	2.06	17.6	207	0.3996C	1.7976B	1.8410B	1.9681A	2.0237A	2.0330A					
0352 – 275	2.819	17.9	209	1.4051A	2.1442B	2.2002C	2.5792B	2.8001B						
0353 – 383	1.959	17.5	152	1.4216B										
0400 – 271	2.831	18.5	209	1.2224B	2.4685B	2.7820B	2.8540B							
0402 – 362	1.416	17.17	144	0.797C										
0420 + 007	2.918	19	209	1.5269C	2.2953B	2.6526C								
0420 – 014	0.915	17.76	139	0.633B										
0420 – 388	3.12	16.92	206	3.0877B										
0421 + 019	2.051	17.5	211	0.0002B	1.4555B	1.5378B	1.6376B	1.6387B	1.9993A					
0424 – 131	2.17	17.5	207	0.0000B	1.0347B	1.5519B	1.5527B	1.5615B	1.7161B	1.7886C	2.0343C	2.1330B	2.1730B	
0438 – 136	3.244	—	214	1.5190A	2.3639C	2.3663B	2.5496B							
0440 – 168	2.68	—	207	1.0066A	1.0077A	2.2142B	2.2288A							
0446 – 208	1.896	17	146	0.0667B	1.8672A									
0449 – 135	3.10	18.2	209	1.2665B	1.4205B	2.3123B	3.0547B							
0450 – 132	2.25	—	207	0.4940B	1.1746B	2.0668A	2.1063A	2.2315A						
0453 – 423	2.661	17.1	121	0.7261A	0.9087A	1.1495A	1.4596C	2.2052C	2.2765A	2.3967B				
0454 + 039	1.35	16.53	211	-0.0003B	0.8596A	1.1536B								
0454 – 220	0.534	17.0	175	0.4745A	0.483C									
0457 + 024	2.384	19.4	104	0.4234C	0.4272C	0.4717A	1.8326C							
0528 – 250	2.77	17.24	207	0.9441B	2.1408A	2.2056B	2.2081B	2.5382B	2.6736B	2.8052B	2.8116A	2.8145B		
0537 – 286	3.11	20	105	2.9773A	3.0972C									
0551 – 366	2.37	17.6	206	1.3007B	1.7476B	1.8971A	1.9625B							
0637 – 752	0.656	15.75	175	0.0000B	0.152B									
0642 + 449	3.402	17.9	209	0.805C	1.2468B	2.016C	2.448B	2.492C	2.912B	2.9724B	3.1238B	3.192C	3.2483B	
0642 – 349	2.158	18.5	144	2.144B	2.159B									
0731 + 653	3.04	18.5	213	0.9315B	1.6605B	2.2770B	2.3627C	2.8861B	2.9099B					
0735 + 178	—	15.5	150	0.424A										
0736 – 063	1.901	18.5	152	1.9131B	1.9310A									
0747 + 613	2.492	17.5	133	1.987B	2.211B									
0802 + 103	1.952	18.4	65	1.9458A	1.9499A									
0805 + 046	2.877	18.1	148	0.70300B	0.95942B	1.01450B	2.47637A	2.87797A						
0820 + 296	2.368	18.5	67	2.0218C										
0824 + 110	2.278	19.0	104	-0.0002C	0.4990B	0.5374C	0.6637C	1.6229B	2.1803B					
0827 + 243	0.939	17.5	89	0.5248A										
0830 + 115	2.976	18.5	209	0.8032B	0.9166C	2.1247C	2.2168C	2.4496C	2.7664C					
0831 + 128	2.73	17.8	207	2.0844B										
0835 + 580	1.54	17.62	199	1.5322B	1.5347B	1.5431B								
0836 + 113	2.67	18.8	212	0.3678B	0.7877A	1.8226B	2.4672A	2.469B						
0836 + 195	1.69	17.6	199	1.2755B	1.3460B	1.4226B	1.4251C	1.6729C						
0837 + 109	3.33	—	207	1.4634C	1.4648C	2.4156B	2.9547C	3.1430B						
0843 + 136	1.88	17.8	199	0.6056B	0.6076B	1.7072B								
0846 + 156	2.912	18.2	209	0.7698B	1.3733B	1.8096C	2.2800B							
0848 + 163	1.93	16.9	207	-0.0001C	0.5862B	0.5903B	1.4575B	1.4684B	1.4704B	1.9159B	1.9175A			
0852 + 197	2.22	—	207	0.4152B	1.9400B	2.1715A								
0854 + 191	1.90	19.39	207	0.2710B	1.2954B	1.2973B	1.3019B	1.3525B	1.3554B	1.4755C	1.6915C	1.7323A	1.7367A	1.8424B
				1.8550B										
0856 + 170	1.45	17.4	199	1.3839B	1.4642B									
0913 + 072	2.79	17.1	207	1.9994B	2.0433B	2.0633A	2.1452C							
0932 + 501	1.92	17.4	179	1.738B	1.779B	1.815B	1.840B							
0933 + 733	2.528	17	133	2.334A	2.507A									
0941 + 261	2.906	19	209	0.8543C	1.0907B	1.4236B								
0952 + 179	1.47	17.23	199	0.0001C	0.2378B									
0955 + 326	0.533	15.7	99	0.0000B	0.0047B	0.5133B								
0956 + 122	3.301	17.8	209	3.2230B										
0957 + 003	0.907	17.6	174	0.672B										
0957 + 561A	1.41	17.0	211	1.125B	1.3910A	1.3913A								
0957 + 561B	1.41	17.0	211	1.125B	1.3910A	1.3912A								
0958 + 551	1.75	16.00	211	0.2413C	1.2065C	1.2105C	1.2142C	1.2728B	1.2780B	1.3560B	1.3771C	1.7318B	1.7331B	
0958 + 731	2.067	17	133	1.837B										
1011 + 091	2.268	17.8	178	1.04C	1.4922A									
1011 + 250	1.634	15.4	199	0.0002B	0.2585B	1.4572B	1.4570C	1.5999A						
1011 + 280	0.899	18.6	106	0.8897A										
1017 + 109	3.156	18.3	209	1.2401C	2.5401B									

Table 3 – *continued*

QSO	z_{em}	V	Lref	z_{abs}										
1017 + 280	**1.93**	**15.69**	**207**	-0.0001B	1.5367B	1.5951B	1.6081A	1.7667B	1.7984A	1.8344B				
1037 − 270	**2.18**	**17.4**	**205**	0.0001B	0.01529C	1.0768A	1.9122A	1.9140A	1.9722A	2.0289A	2.0708A	2.0716A	2.0755C	2.0825A
				2.1287A	2.1285A	2.1345B	2.1361C	2.1363C	2.1390A	2.1399A				
1038 + 064	**1.270**	**16.8**	**87**	0.4415B										
1038 − 272	**2.33**	**17.8**	**205**	0.0001B	1.8502A	1.8936B	1.9550B	1.9600A	2.0144C	2.0652C	2.0768A	2.0851C	2.1455A	2.3047C
				2.3147C										
1055 − 045	**1.43**	**17.79**	**199**	1.2565B										
1101 − 264	**2.15**	**16.02**	**185**	0.0000C	0.35904B	0.35922A	1.1878B	1.2033B	1.4773C	1.8397C	2.126C			
1107 + 036	**0.962**	**19.7**	**149**	0.952C										
1115 + 080A	**1.725**	**16.5**	**157**	0.0000B	1.6998B	1.7283C	1.7304C	1.7322B	1.7353B					
1116 + 128	**2.118**	**19.2**	**9**	1.950B										
1126 + 101	**1.52**	**18.0**	**199**	0.002C	1.4389B	1.5098B	1.5173B							
1136 + 122	**2.894**	**17.6**	**212**	0.3169C	1.7895C	2.0743C								
1137 + 660	**0.652**	**16.3**	**8**	0.655C										
1138 + 040	**1.88**	**16.05**	**207**	1.5839B										
1148 − 001	**1.98**	**17.34**	**207**	1.4670B	1.9862B									
1151 + 068	**2.62**	**18.6**	**212**	1.7741A	1.8189A									
1157 + 014	**1.986**	**17.74**	**211**	1.7199B	1.9441A	1.9443B								
1159 + 123	**3.50**	**17.5**	**207**	0.3271C	1.4066C	1.9965C	1.9975C	3.2258C	3.2613C	3.5263A				
1208 + 101	**3.811**	—	**214**	2.8573B	2.8606B	2.8640B	2.9137B	2.9158B						
1209 + 107	**2.19**	**17.76**	**152**	0.3930B	0.6296A	1.8434B								
1213 + 093	**2.72**	**17.2**	**207**	1.9634B	2.0935B	2.2345A	2.5229A							
1213 − 003	**2.69**	**17.0**	**206**	1.3197A	1.5542A									
1213 − 065	**1.41**	**17.72**	**208**	0.7890A										
1217 + 023	**0.240**	**16.5**	**8**	0.24C										
1218 + 753	**0.645**	**18.2**	**182**	0.642A										
1222 + 228	**2.04**	**19.0**	**207**	0.6681B	0.6681B	1.4867B	1.4867B	1.5239B	1.9368B	1.9372A	1.9805B	2.0555B		
1225 + 317	**2.200**	**15.8**	**211**	1.3586B	1.6266C	1.6315C	1.7946A	1.7947B	1.7956A	1.8871B	1.8975B	2.1109C	2.1203B	
1226 + 023	**0.158**	**12.8**	**120**	0.0000B										
1226 + 105	**2.296**	**12.8**	**104**	0.4308B	0.4627C	0.9378B	2.1981C							
1228 + 077	**2.391**	**17.0**	**206**	0.071C	1.3007C	1.8971A	2.020A	2.138B						
1228 + 078	**1.813**	**17.47**	**152**	1.6333B	1.8091A									
1229 − 021	**1.038**	**16.75**	**190**	0.395A										
1232 + 134	**2.364**	**19.5**	**177**	2.247A										
1243 − 072	**1.285**	**18.0**	**116**	0.436B										
1245 + 345	**2.07**	**17.94**	**207**	1.6106B	1.6778B									
1246 − 057	**2.22**	**16.8**	**93**	0.6399B	1.2015C	1.6454B	1.6478B	1.6721B	2.2123A					
1247 + 267	**2.04**	**15.8**	**207**	1.4056B	1.4076B	1.9596B								
1256 + 357	**1.88**	**21.2**	**199**	1.5880B	1.8041B	1.8344B	1.8945B	1.8971B	1.8995B					
1258 + 286	**1.922**	**17.7**	**199**	1.464C	1.8944A									
1303 + 308	**1.770**	**17.8**	**130**	1.661C	1.671B	1.691B	1.708B	1.728A	1.746B	1.763B	1.775C			
1308 + 182	**1.68**	**17.5**	**199**	1.4451B										
1308 + 326	**0.996**	**19**	**90**	0.879B										
1309 − 056	**2.224**	**17.44**	**152**	2.0435A	2.1326B	2.1532B	2.1635A							
1309 − 216	—	**17.8**	**136**	1.361B	1.489A	1.491C								
1311 − 270	**2.26**	**17.43**	**206**	-0.0001C	0.7032C	1.5155B	1.6865B							
1313 + 200	**2.47**	**18.5**	**107**	2.465B										
1317 − 005	**0.890**	**17.3**	**25**	0.87C										
1318 + 290	**1.71**	**16.9**	**199**	1.5163B	1.6729B									
1327 − 206	**1.169**	**17**	**176**	0.0000C	0.0180B	0.8528A								
1328 + 307	**0.846**	**17.2**	**124**	0.6924A										
1329 + 412	**1.94**	**16.30**	**207**	0.5009B	1.4716B	1.6009B	1.8357B	1.8401B	1.9410B					
1331 + 170	**2.08**	**16.71**	**211**	-0.0002B	0.7440A	0.7454A	0.9539C	1.3277C	1.4462B	1.7770A	1.7866A			
1332 + 552	**1.241**	**16.**	**85**	1.2078B										
1333 + 286	**1.908**	**18.7**	**29**	1.874B										
1337 + 113	**2.919**	—	**212**	2.0113B	2.0164B	2.1400B	2.1506B	2.5084B	2.7968A					
1346 − 036	**2.34**	**17.27**	**152**	0.4453C										
1347 + 112	**2.697**	**18.5**	**212**	0.6022A	2.4720A	2.6217A	2.7431B							
1354 + 195	**0.720**	**16.0**	**130**	0.457B										
1413 + 117	**2.551**	**16.70**	**178**	1.6606A	2.070A									
1416 + 067	**1.43**	**16.79**	**199**	1.2734B	1.3751B	1.4348A	1.4380A	1.4408A						
1416 + 159	**1.472**	**17.0**	**130**	1.473C	1.478B									
1421 + 122	**1.61**	**18.04**	**206**	1.3610B										
1421 + 330	**1.90**	**16.70**	**199**	0.4566C	1.5852B	1.7183B	1.7597B							
1435 + 638	**2.07**	**15.00**	**207**	1.4592C	1.4792C	1.5925C	1.9236A							
1442 + 101	**3.54**	**17.78**	**207**	2.565B	2.6336B	2.6705C	2.6939C	3.0474C	3.1102B					
1448 − 232	**2.215**	**17**	**172**	1.3383C	1.5259C	1.5846A	1.7234A							
1510 + 115	**2.11**	—	**207**	-0.0001B	2.0855B	2.0893A	2.1010A							
1510 − 089	**0.361**	**16.5**	**175**	0.351B										
1511 + 091	**2.88**	—	**207**	2.5596C	2.6702A	2.8352B	2.8389A	2.8470A	2.8530A	2.8570B	2.8606A	2.8635A	2.8669A	2.8853A
1511 + 103	**1.55**	**17.73**	**199**	0.4371B										

1991MNRAS.250...24Y

Table 3 – *continued*

QSO	z_{em}	V	Lref	z_{abs}										
1517 + 239	1.90	17	207	0.7382B	1.4147B									
1523 + 214	1.92	17.96	199	1.7343B	1.7933A	1.9307B								
1548 + 092	2.75	17.5	207	0.7703B	2.2475C	2.3187A	2.4906B							
1548 + 114A	0.436	17	186	0.0000B										
1548 + 114B	1.901	19.0	186	1.4229B	1.6083A	1.7564B	1.8925A							
1550 – 269	2.145	21.5	184	2.088B										
1556 + 335	1.65	17.0	200	1.2321C	1.6505B									
1559 + 173	1.94	17.70	199	1.9617A										
1601 + 182	3.238	19.5	189	3.218B										
1602 + 178	3.003	19.5	189	2.980B										
1602 – 002	1.625	17.49	206	1.3250B										
1623 + 2685	2.49	18	210	2.2760C										
1623 + 2686	2.605	19.4	210	1.9856C	2.0960A	2.2413A								
1623 + 2689	2.53	16	210	0.3290C	0.8873A	0.8885A	1.0398B	1.8804B	1.9729B	2.0500A	2.0526A	2.1615B	2.4019C	2.5287B
1624 + 2685	2.18	18.5	210	2.0856C	2.1777B									
1634 + 176	1.90	18.0	199	-0.0001C	1.8775B	1.8799B	1.8894A							
1634 + 267A	1.961	19.5	173	1.118C										
1700 + 518	0.288	15.4	191	0.0000C	0.2644B	0.2697B								
1715 + 535	1.93	16.30	207	-0.0002C	0.3672B	1.6330A	1.7587B							
1756 + 237	1.721	18.0	211	0.0002B	0.3715C	1.4444B	1.4614A	1.6137B	1.6747A	1.732B				
1836 + 511	2.827	19.9	209	0.7555B	0.8182B	0.8637B	1.1260B							
1912 – 550	0.402	16.5	175	0.40117B										
2000 – 330	3.777	17.8	214	1.4542B	2.0330C	2.9780B	3.0465B	3.1726A	3.1881C	3.1914A	3.2303B	3.3334A	3.3375B	3.5479B
				3.5523B	3.5575B									
2020 – 370	1.050	17.5	142	0.0000B	0.0288B									
2038 – 012	2.783	19.2	209	0.7952B	2.4238B	2.6565B								
2044 – 168	1.94	17.36	206	1.3285B	1.5586C	1.7325B	1.7341B	1.7355B	1.9199B	1.9213B				
2048 + 312	3.185	19.7	209	1.3485C	2.3368B	2.4561B	3.1415B							
2116 – 358	2.34	17.35	206	1.9961A										
2120 + 168	1.80	17.96	199	1.5628B	1.7980B									
2126 – 158	3.27	17.3	213	-0.0001B	2.0231B	2.3939B	2.4597B	2.6383A	2.6791B	2.7280B	2.7686A	2.8194B	2.9073A	
2128 – 123	0.501	15.9	130	0.4301B										
2135 – 147	0.200	16	185	0.200B										
2136 + 141	2.43	18.5	201	1.824B										
2142 – 758	1.139	17.0	97	0.959B										
2145 + 067	0.99	16.4	139	0.7899B										
2146 – 133	1.800	19.5	11	1.783B										
2154 – 205	2.00	18.4	184	1.915B										
2201 + 315	0.298	15.4	39	0.282B										
2204 – 408	3.169	—	214	2.6280B	2.8375B	2.8505B	3.1588B							
2206 – 199	2.56	17.33	207	0.7520A	1.0169A	1.9210B	2.0140B							
2212 – 299	2.703	17.4	206	1.9391B										
2223 – 052	1.404	18.3	90	0.8474B										
2225 – 055	1.981	17.7	26	1.8910C	1.9517C									
2227 – 394	3.45	18.8	81	3.373A										
2233 + 131	3.295	18.4	209	1.0260B	2.4915B	2.8284B	3.1519B							
2233 + 136	3.209	18.6	209	1.0957C	2.8894B									
2239 – 386	3.511	—	214	1.0328C	2.3767B	2.6006B								
2251 + 244	2.328	17.8	67	2.1563B	2.3633A									
2341 – 235	2.822	18.3	209	1.0757B	2.2380B									
2342 + 089	2.78	—	207	0.7233B	0.8380C	0.9489C	2.1844B	2.3466A	2.3483B	2.4442B	2.5883A	2.6241B	2.6271A	2.6299B
2343 + 125	2.52	—	207	0.7313B	2.1143B	2.1693B	2.1714B	2.4285A	2.4307A	2.5696B				
2344 + 125	2.76	—	207	1.0463A	2.2754C	2.4265A	2.4293B	2.4370C	2.6350B	2.6964C	2.7016B	2.7814B		
2345 + 006A	2.152	19.5	193	1.491A										
2345 + 006B	2.147	21	193	1.483B	1.491A									
2348 – 011	3.01	18.0	213	0.8632C	1.0798C	2.2007C	2.4282A	2.6172A						
2349 + 002	2.495	19.90	198	1.160A										
2349 + 003	1.951	20.26	198	1.140A										
2351 – 154	2.665	17.0	104	0.6293B	2.6447B	2.6775A								
2357 – 345	2.07	17.8	208	0.9954A										
2359 + 003	2.896	19.9	209	1.3442B	2.3820C									
2359 + 068	3.234	18.6	209	0.8958C	2.7312B	2.7478B	2.7801B	2.8641B	2.9149B	2.9437C	2.9872C	3.1724B		
2359 – 022	2.82	18	201	2.095B	2.153B									

References to Table 3 are given on pages 38 and 39.

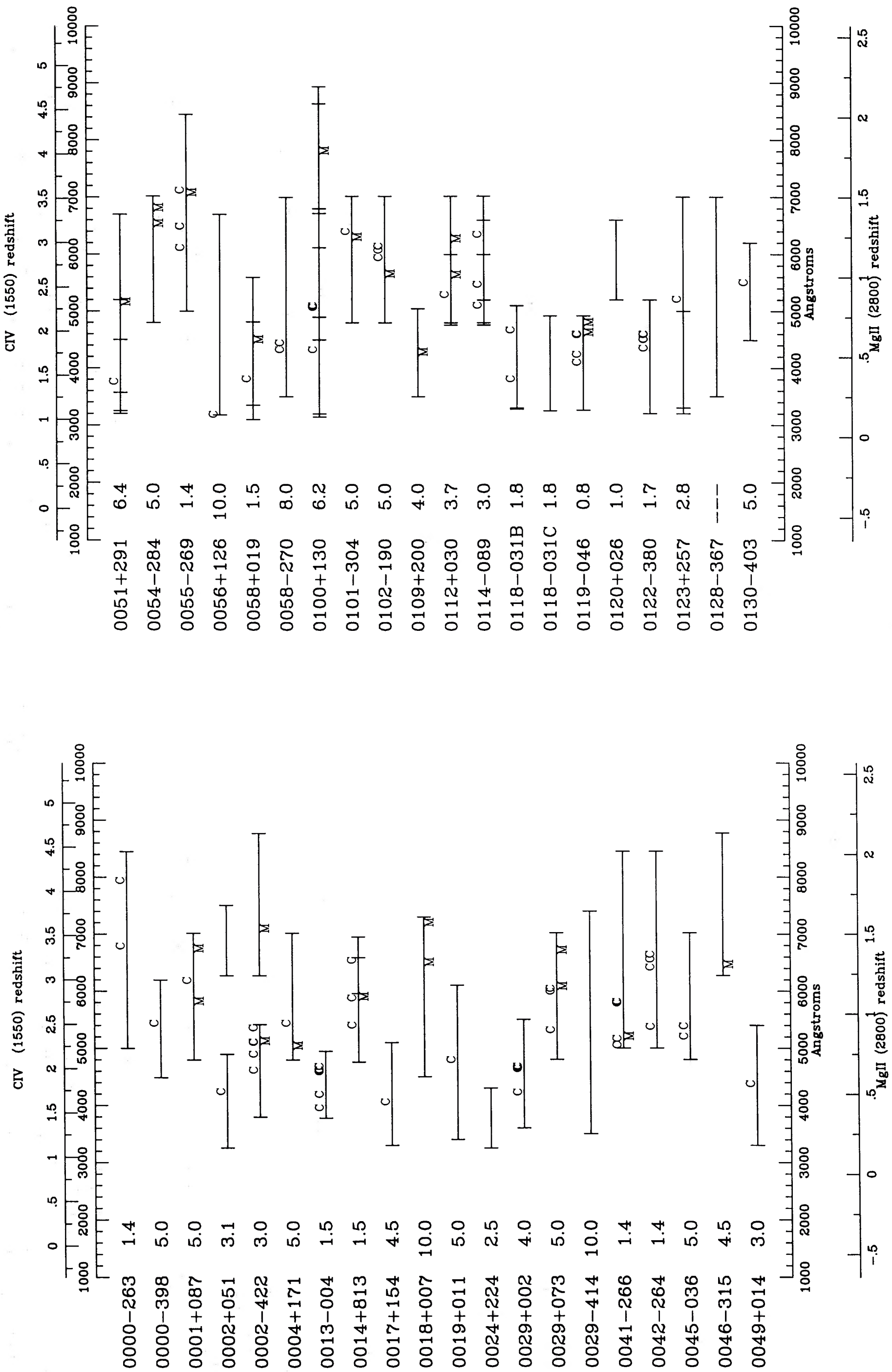

Figure 1. Spectral coverage maps for each QSO with a detected absorber in the catalogue. A 'C' appears at the observed redshift of any grade 'A' or 'B' C IV doublet. Correspondingly, 'M' marks Mg II doublets. Resolution in Å appears to the right of the QSO name.

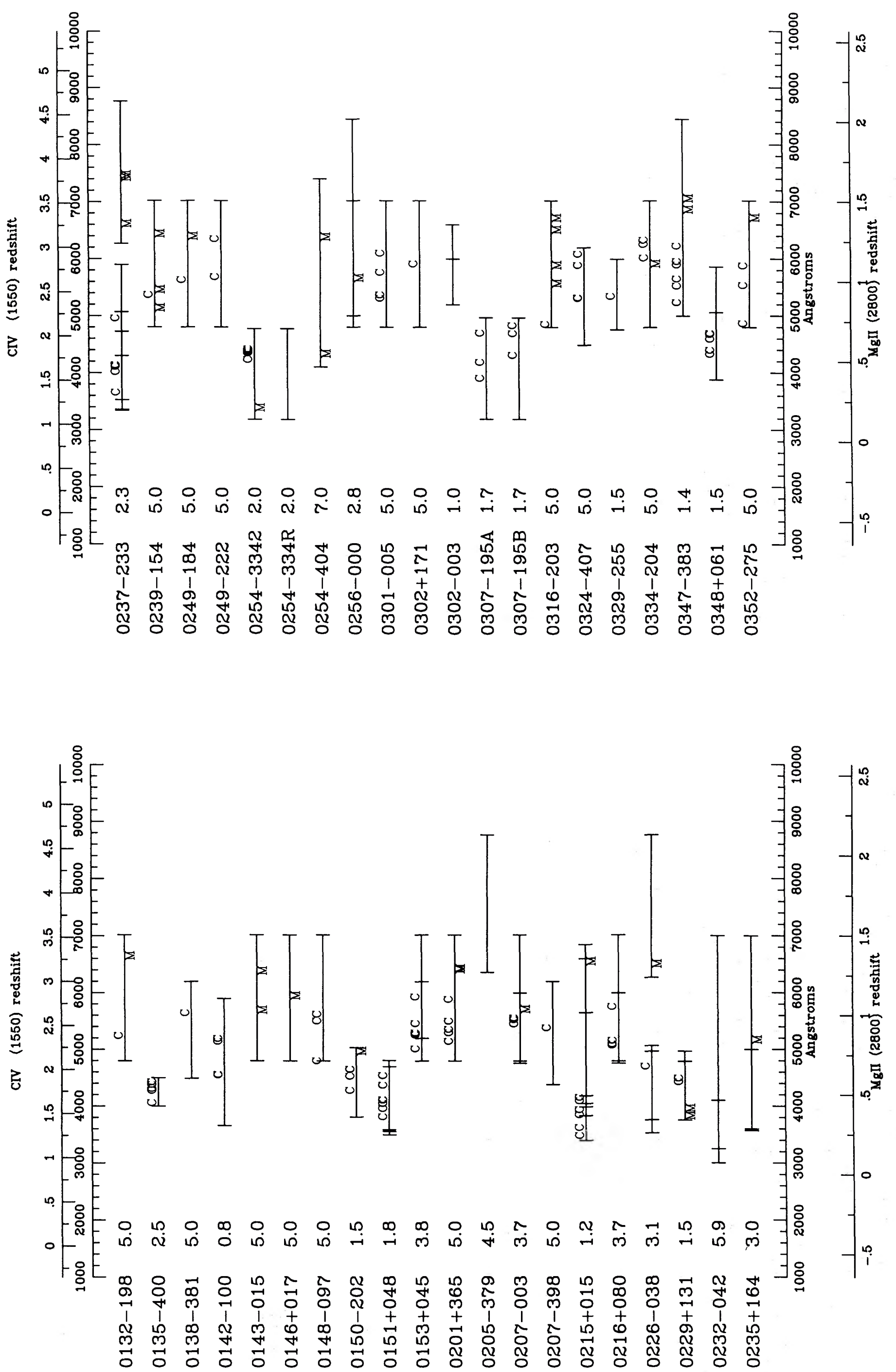

Figure 1 – *continued*

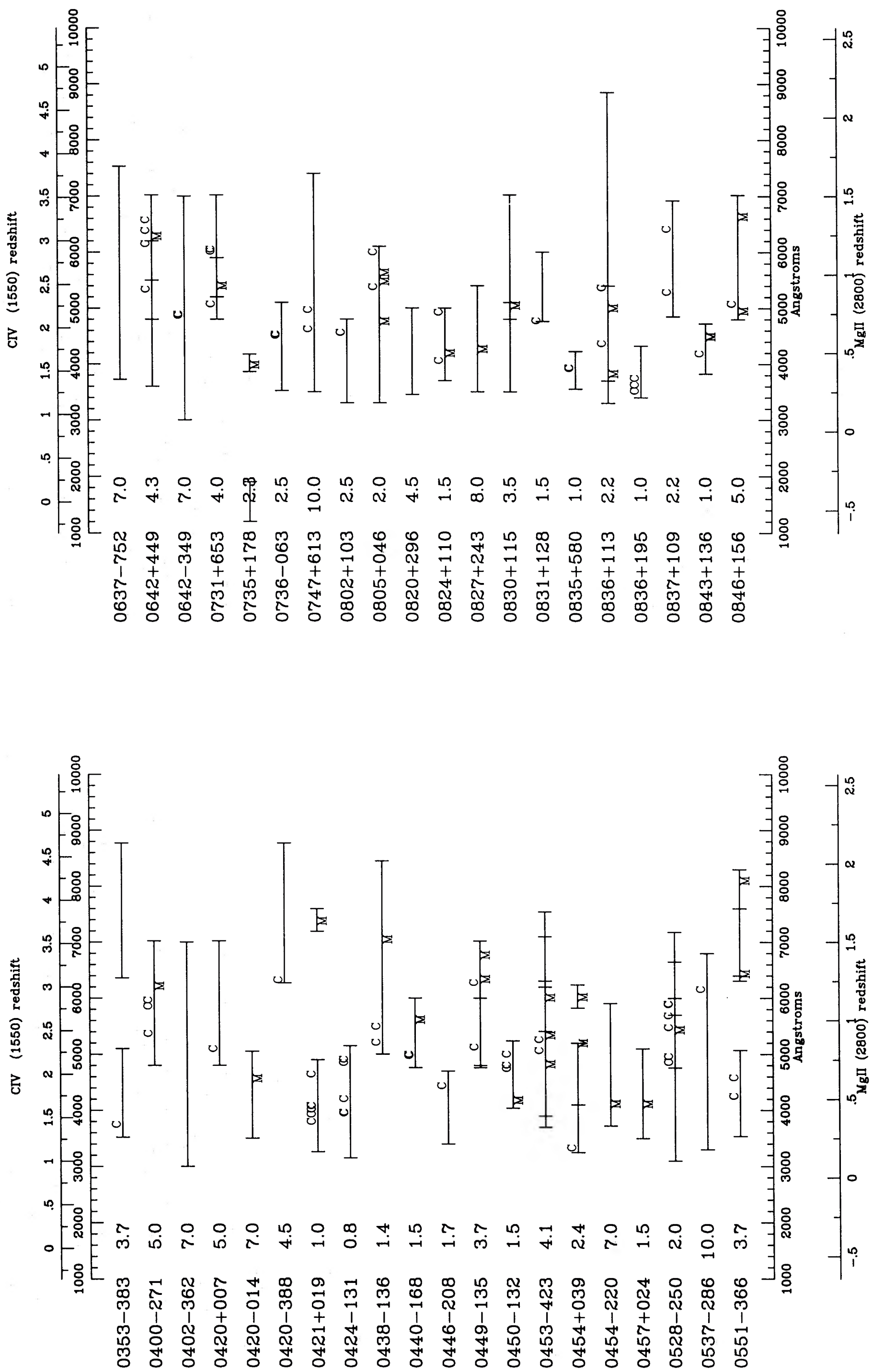

Figure 1 – *continued*

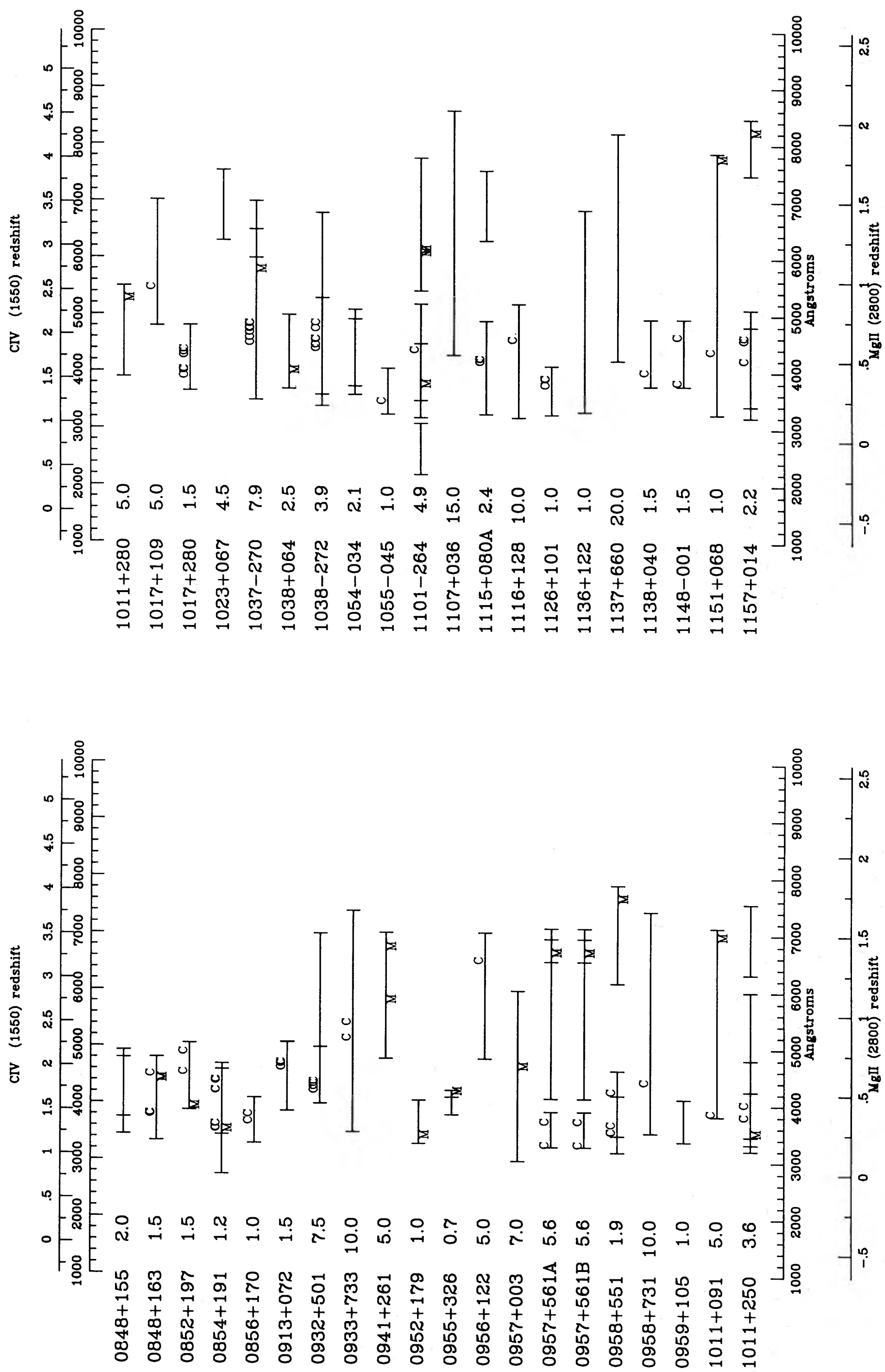

Figure 1 – *continued*

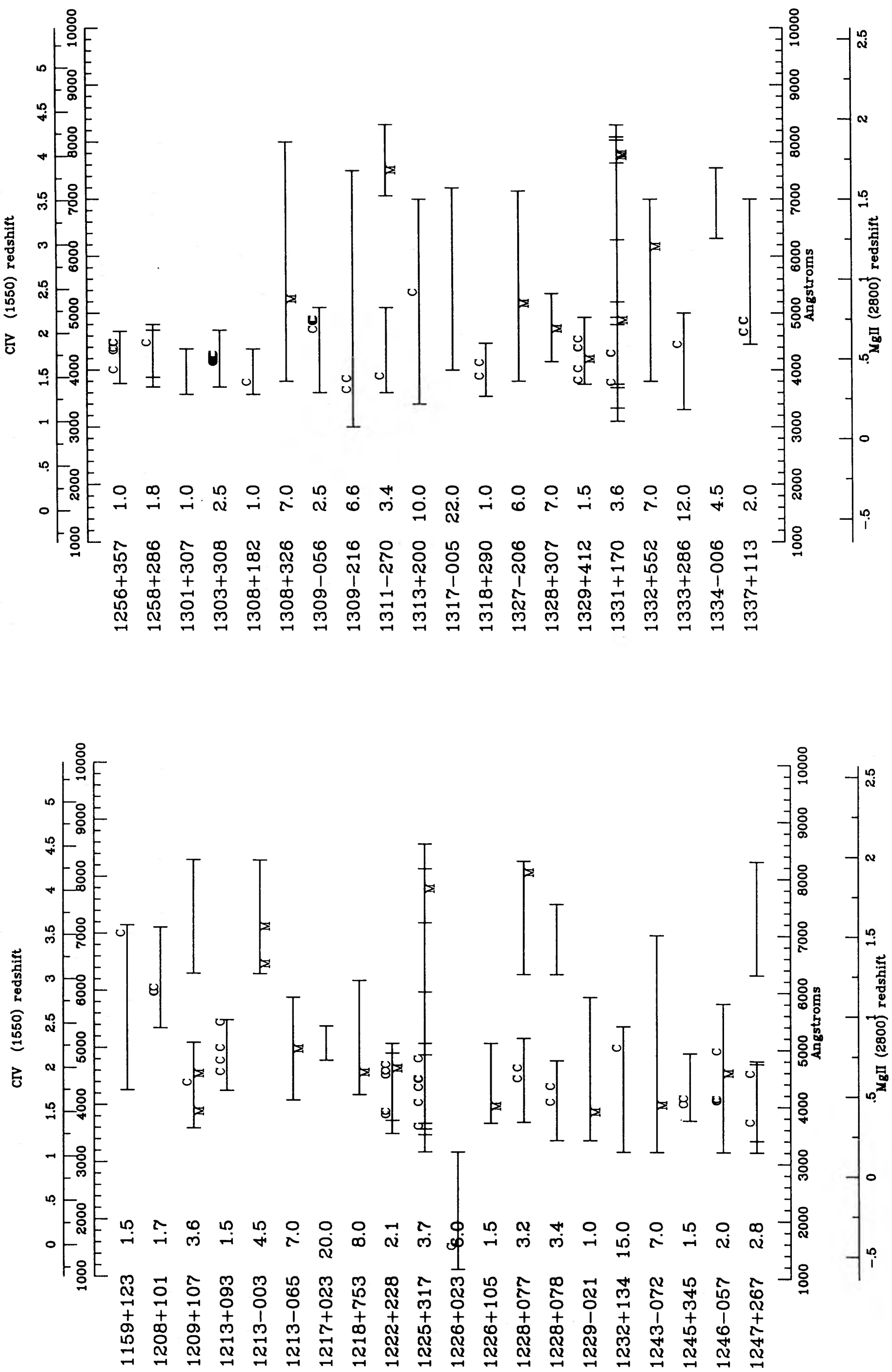

Figure 1 – *continued*

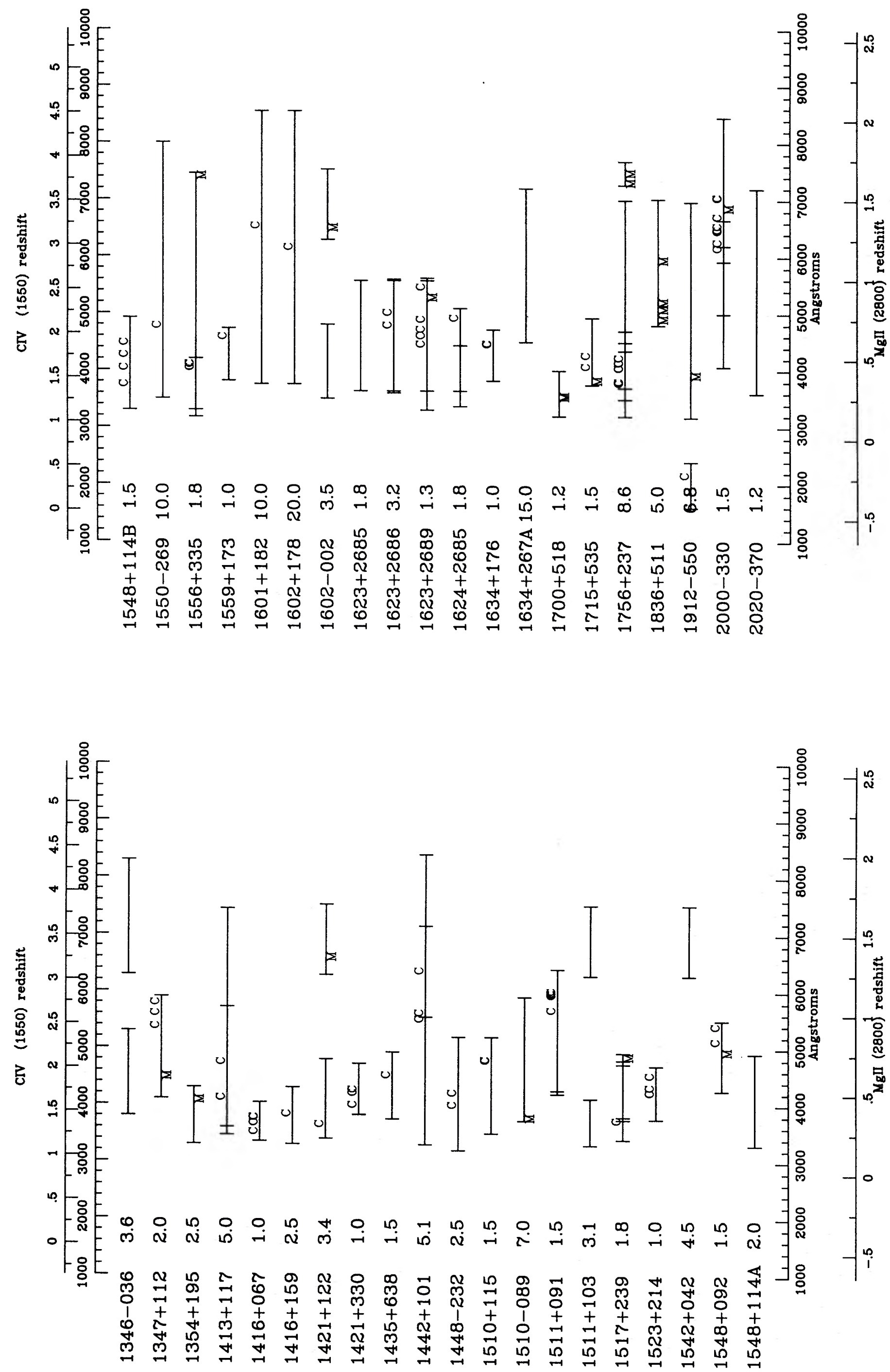

Figure 1 – *continued*

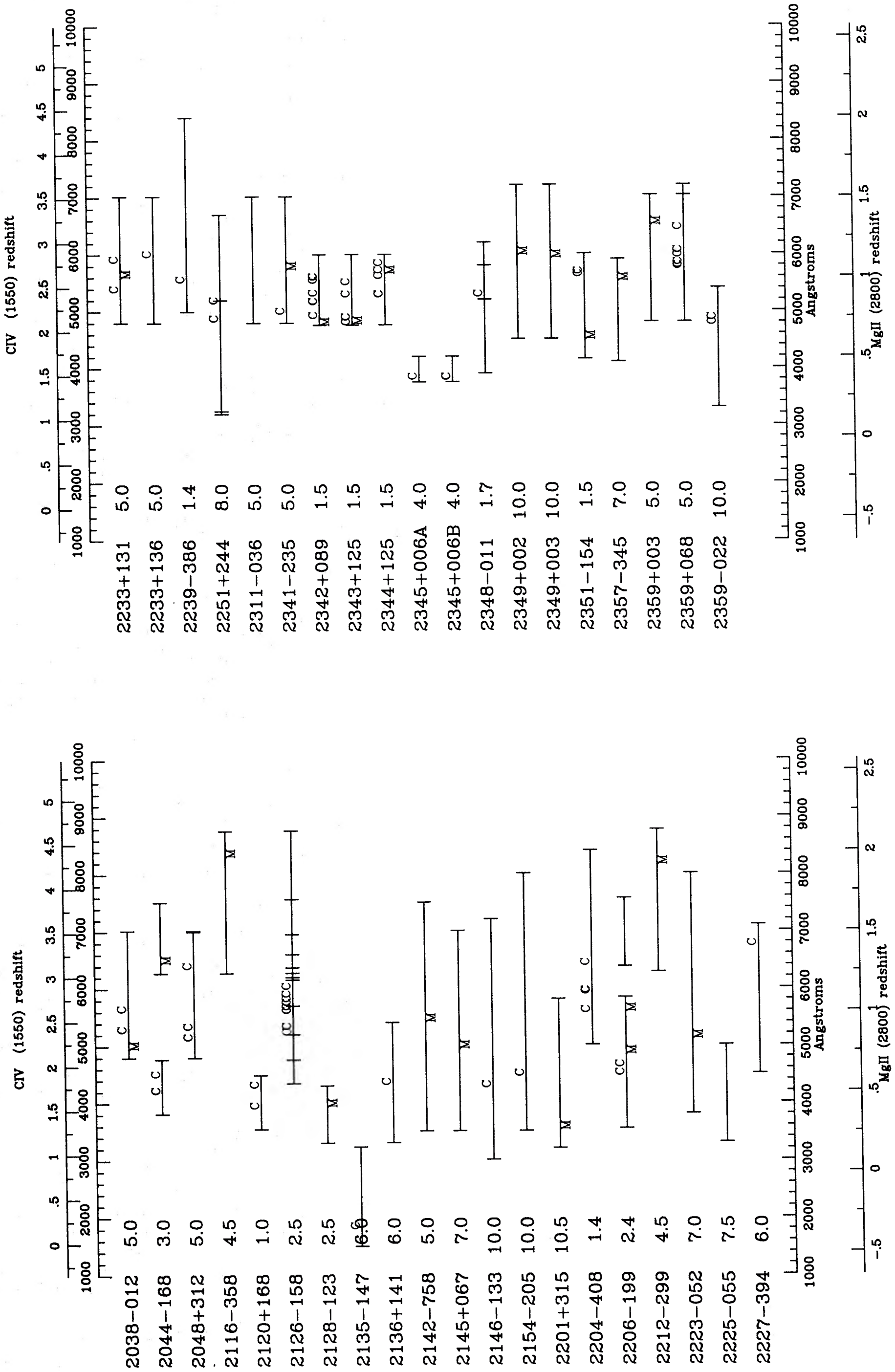

Figure 1 – *continued*

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33 – Chan & Burbidge (1971).
34 – Bahcall & Goldsmith (1971).
35 – Lowrance, Morton, Zuccino, Oke & Schmidt (1972).
36 – Burbidge & Strittmatter (1972).
37 – Beaver, Burbidge, McIlwain, Epps & Strittmatter (1972).
38 – Morton & Morton (1972).
39 – Tritton, Henbest & Penston (1973).
40 – Bahcall & Joss (1973).
41 – McKee & Sargent (1973).
42 – Strittmatter, Carswell, Burbidge, Hazard, Baldwin, Robinson & Wampler (1973).
43 – Bahcall, Bahcall & Schmidt (1973).
44 – Brown & Roberts (1973).
45 – Morton & Richstone (1973).
46 – Baldwin, Burbidge, Hazard, Murdoch, Robinson & Wampler (1973).
47 – Carswell & Strittmatter (1973).
48 – Wampler, Robinson, Baldwin & Burbidge (1973).
49 – Johnson (1974).
50 – Carlson (1974).
51 – Carswell, Strittmatter, Williams, Kinman & Serkowski (1974).
52 – Wills & Wills (1974).
53 – Strittmatter, Carswell, Gilbert & Burbidge (1974).
54 – Aaronson, Black & McKee (1974).
55 – Schmidt (1974).
56 – Baldwin, Burbidge, Burbidge, Hazard, Robinson & Wampler (1974).
57 – Browne, Savage & Bolton (1975).
58 – Carswell, Strittmatter, Williams, Beaver & Harms (1975).
59 – Carswell, Hilliard, Strittmatter, Taylor & Weymann (1975).
60 – Aaronson, McKee & Weisheit (1975).
61 – Boksenberg & Sargent (1975).
62 – Wingert (1975).
63 – Oemler & Lynds (1975).
64 – Haschick & Burke (1975).
65 – Williams, Strittmatter, Carswell & Craine (1975).
66 – Wills & Wills (1976).
67 – Carswell, Coleman, Strittmatter & Williams (1976).
68 – Savage, Browne & Bolton (1976).
69 – Burbidge, Caldwell, Smith, Liebert & Spinrad (1976).
70 – Kinman (1976).
71 – Smith (1976).
72 – Gilbert, Angel, Grandi, Coleman, Strittmatter, Cromwell & Jensen (1976).
73 – Baldwin, Smith, Burbidge, Hazard, Murdoch & Jauncey (1976).
74 – Ulrich (1976).
75 – Williams & Weymann (1976).
76 – Peterson, Jauncey, Wright & Condon (1976).
77 – Coleman, Carswell, Strittmatter, Williams, Baldwin, Robinson & Wampler (1976).
78 – Osmer & Smith (1976).
79 – Miller (1977).
80 – Browne & Savage (1977).
81 – Smith, Boksenberg, Carswell & Whelan (1977).
82 – Wright, Jauncey, Peterson & Condon (1977).
83 – Osmer & Smith (1977).
84 – Weymann, Williams, Beaver & Miller (1977).
85 – Hawley, Miller & Weymann (1977).
86 – Carswell, Smith & Whelan (1977).
87 – Burbidge, Smith, Weymann & Williams (1977).
88 – Peterson, Coleman, Strittmatter & Williams (1977).
89 – Ulrich & Owen (1977).
90 – Perry, Burbidge & Burbidge (1978).
91 – Peterson, Craine & Strittmatter (1978).
92 – Savage, Bolton, Tritton & Peterson (1978).
93 – Boksenberg, Carswell, Smith & Whelan (1978).
94 – Hunstead, Murdoch & Shobbrook (1978).
95 – Morton, Savage & Bolton (1978).
96 – Oke (1978).
97 – Jauncey, Wright, Peterson & Condon (1978).
98 – Morton, Williams & Green (1978).
99 – Boksenberg & Sargent (1978).
100 – Boroson, Sargent, Boksenberg & Carswell (1978).
101 – Jauncey, Wright, Peterson & Condon (1978).
102 – Wilkerson, Coleman, Gilbert, Strittmatter, Williams, Baldwin, Carswell & Grandi (1978).
103 – Adams, Coleman, Stockman, Strittmatter & Williams (1978).
104 – Roberts, Burbidge, Burbidge, Crowne, Junkkarinen & Smith (1978).
105 – Wright, Peterson, Jauncey & Condon (1978).
106 – Peterson & Strittmatter (1978).
107 – Wills & Wills (1979).
108 – Wolfe & Davis (1979).
109 – Wright, Peterson & Jauncey (1979).
110 – Clowes, Smith, Savage, Cannon, Boksenberg & Wall (1979).
111 – Whelan, Smith & Carswell (1979).
112 – Wright, Morton, Peterson & Jauncey (1979).
113 – Walsh, Wills & Wills (1979).
114 – Boksenberg, Carswell & Sargent (1979).
115 – Smith, Jura & Margon (1979).
116 – Wright, Peterson, Jauncey & Condon (1979).
117 – Wright, Peterson, Jauncey & Condon (1979).
118 – Young, Sargent, Boksenberg, Carswell & Whelan (1979).
119 – Brown & Spencer (1979).
120 – Boggess (1979).
121 – Sargent, Young, Boksenberg & Turnshek (1979).
122 – Turnshek, Weymann & Williams (1979).
123 – Perronod & Chaisson (1979).
124 – Spinrad & McKee (1979).
125 – Peterson, Wright, Jauncey & Condon (1979).

126 – Burbidge, Junkkarinen & Koski (1979).
127 – Weymann, Chaffee, Davis, Carleton, Walsh & Carswell (1979).
128 – Grandi (1979).
129 – Lewis, MacAlpine & Weedman (1979).
130 – Weymann, Williams, Peterson & Turnshek (1979).
131 – Turnshek, Weymann, Liebert, Williams & Strittmatter (1979).
132 – Walsh, Carswell & Weymann (1979).
133 – Afanasjev, Karchentsev, Lipovetsky, Lorenz & Stoll (1979).
134 – Sargent, Young, Boksenberg & Tytler (1980).
135 – Osmer & Smith (1980).
136 – Blades, Murdoch & Hunstead (1980).
137 – White, Murdoch & Hunstead (1980).
138 – Morton, Jian-sheng, Wright, Peterson & Jauncey (1980).
139 – Wills Netzer, Uomoto & Wills (1980).
140 – Wills & Wills (1980).
141 – Green, Pier, Schmidt, Estabrook, Lane & Wahlquist (1980).
142 – Boksenberg, Danziger, Fosbury & Goss (1980).
143 – Weymann, Carswell & Smith (1981).
144 – Surdej & Swings (1981).
145 – Boksenberg & Snijders (1981).
146 – Blades, Hunstead & Murdoch (1981).
147 – Smith (1981).
148 – Jian-sheng, Morton, Peterson, Wright & Jauncey (1981).
149 – Baldwin, Wampler & Burbidge (1981).
150 – Bregman, Glassgold & Huggins (1981).
151 – Young, Sargent, Boksenberg & Oke (1981).
152 – Young, Sargent & Boksenberg (1982).
153 – Surdej, Swings, Arp & Barbier (1982).
154 – Carswell, Whelan, Smith, Boksenberg & Tytler (1982).
155 – Wright, Morton, Peterson & Jauncey (1982).
156 – Blades, Hunstead, Murdoch & Pettini (1982).
157 – Young, Sargent & Boksenberg (1982).
158 – Sargent, Young & Boksenberg (1982).
159 – Sargent, Young & Schneider (1982).
160 – Peterson, Savage, Jauncey & Wright (1982).
161 – Shaver, Boksenberg & Robertson (1982).
162 – Wilkes, Wright, Jauncey & Peterson (1983).
163 – Markaryan, Lipovetskii & Stepanyan (1983).
164 – Robertson & Shaver (1983).
165 – Baldwin & Smith (1983).
166 – Bergeron & Knuth (1983).
167 – Junkkarinen, Burbidge & Smith (1983).
168 – Ford, Ciardullo & Harms (1983).
169 – Chaffe, Weyman, Latham & Strittmatter (1983).
170 – Shaver & Robertson (1983).
171 – Pettini, Hunstead, Murdoch & Blades (1983).
172 – Jian-sheng, Morton, Peterson, Wright & Jauncey (1984).
173 – Djorgovski & Spinrad (1984).
174 – Bergeron & Boisse (1984).
175 – Bergeron & Knuth (1984).
176 – Knuth & Bergeron (1984).
177 – He, Cannon, Peacock, Smith & Oke (1984).
178 – Drew & Boksenberg (1984).
179 – Turnshek, Weymann, Carswell & Smith (1984).
180 – Carswell, Morton, Smith, Stockton, Turnshek & Weymann (1984).
181 – Turnshek (1984).
182 – Gioia, Maccacaro, Schild, Stocke, Liebert, Danziger, Knuth & Lub (1984).
183 – Arp (1984).
184 – Jauncey, Batty, Wright, Peterson & Savage (1984).
185 – Boisse & Bergeron (1985).
186 – Shaver & Robertson (1985).
187 – Levshakov & Varshalovich (1985).
188 – Savage, Clowes, Cannon, Cheung & Smith (1985).
189 – Burbidge, Smith, Junkkarinen & Hoag (1985).
190 – Briggs, Turnshek, Schaeffer & Wolfe (1985).
191 – Pettini & Boksenberg (1985).
192 – Foltz, Chaffee & Weymann (1986).
193 – Tyson, Seitzer, Weymann & Foltz (1986).
194 – Robertson, Shaver, Surdej & Swings (1986).
195 – Ulrich & Perryman (1986).
196 – Bergeron & D'Odorico (1986).
197 – Hunstead, Murdoch, Peterson, Blades, Jauncey, Wright, Pettini & Savage (1986).
198 – Schmidt, Schneider & Gunn (1986).
199 – Foltz, Weymann, Peterson, Sun, Malkan & Chaffee (1986).
200 – Morris, Weymann, Foltz, Turnshek, Shectman, Price & Boroson (1986).
201 – Smith, Cohen & Bradley (1986).
202 – Cristiani, Danziger & Shaver (1987).
203 – Meyer & York (1987).
204 – Meyer & York (1987).
205 – Sargent & Steidel (1987).
206 – Lanzetta, Turnshek & Wolfe (1987).
207 – Sargent, Boksenberg & Steidel (1988).
208 – Ulrich (1989).
209 – Sargent, Steidel & Boksenberg (1989).
210 – Crotts (1989).
211 – Caulet (1989).
212 – Turnshek, Wolfe, Lanzetta, Briggs, Cohen, Foltz, Smith & Wilkes (1989).
213 – Khare, York & Green (1989).
214 – Steidel (1990).

These widths are probably related to the dispersion of individual cloud velocities in each system (York *et al.* 1986). The range of W_λ included in each data point is shown by the horizontal bar through each point. The vertical bar is the square root of the number of systems in each W_λ bin. Across the top, the scale is equivalent width, W_λ, in units of km s^{-1}. Since the lines of C IV are often not saturated, W(km s^{-1}) is a lower

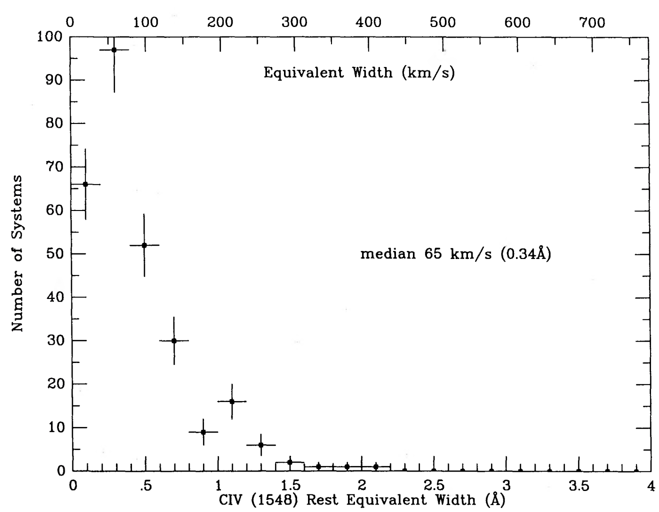

Figure 2. Histogram of C IV (λ1548) equivalent widths for 281 systems, graded quality A or B. The vertical bars through each point represent $\sqrt{M}$, where M is the number of systems with W_λ lying in each bin. Horizontal bars are the bin widths in W_λ. Equivalent widths are labelled in Å at the bottom and in km s^{-1} at the top. If each measured feature were a blend of several saturated components, just overlapping, then W(km s^{-1}) would represent approximately the full range of individual cloud velocities, Δv_s, in each system. Since the components in many systems are not saturated, W(km s^{-1}) is in general a lower limit on Δv_s.

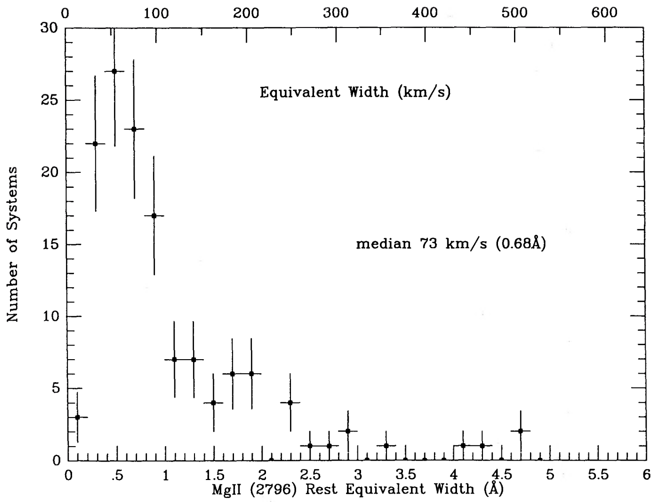

Figure 3. As for Fig. 2, for Mg II (λ2796), for 135 systems of grade A or B.

limit to the actual velocity spread, Δv, of components in the system. [If all components are saturated and contiguous, $W(\text{km s}^{-1}) = \Delta v$.]

Fig. 2 shows a nearly exponential drop off in number with system equivalent width. The point to the left ($W_\lambda \sim 0.2$ Å) is presumably low because of observational selection against weak lines comparable in strength to the limit of detection.

Note that half the systems have minimal spreads in velocity in excess of the velocity spread of gas clouds in the nearest 1 kpc of our Galaxy (± 40 km s^{-1}, considering all species, Cowie & York 1978). Danly (1987) finds C II lines in our Galaxy halo to have spreads up to ± 100 km s^{-1} in some directions, a value exceeded by at least 12 per cent of the Mg II absorbers. However, the lines of C IV are not strong in our halo (Wu *et al.* 1991). Converting C IV equivalent widths towards AGN to velocity units gives a width ± 55 km s^{-1} down to ± 20 km s^{-1} for our halo. Higher-resolution spectra of AGN are required to determine if the lines are unsaturated, and thereby possibly spread over a larger velocity range. The measurements of C IV in high-latitude stars are consistent with the velocity spread of components found by Cowie & York. (Note that the often-cited strong interstellar lines in the spectra of Magellanic Cloud stars probably arise mainly within the Magellanic Clouds.)

While the median velocity equivalent width of C IV is comparable to that of Mg II, the distribution for Mg II in Fig. 3 has a more extreme high-velocity tail, with a large number of systems near $W_v \sim 200$ km s^{-1} and four systems with $W_v > 400$ km s^{-1}. Note the much lower number of 0.1-Å lines in Mg II compared to C IV.

3.2 Doublet ratios and other correlations

Figs (4–11) present doublet ratios and other correlations for systems with numerical equivalent widths of grade A or B with beta > 0.05. Duplicates have been removed and blended lines excluded.

Steidel, Sargent & Boksenberg (1988) noted an increase in doublet ratio with increasing z_{abs}, manifested in the data of Khare, York & Green (1989) as an increase in the relative number of weak C IV doublets with increasing z. This trend in doublet ratio is seen in the data as a whole (Fig. 4), for C IV, but not for Mg II (Fig. 5). C II is notably strong near $z \sim 2$ (Fig. 6, based on only a few systems) but is otherwise typically < 40 per cent of C IV in line strength. The large number of upper limits (crosses) is surprising, since roughly 1/3 of C IV systems have detected Mg II (Caulet 1989). A high signal-to-noise-ratio search for C II might yield a similar detection rate to that for Mg II. The range of ratios W(Si IV)/W(C IV) is generally the same at all z, with a slight trend to more and stronger Si IV lines at high redshifts (50 per cent more detections, see Fig. 7).

The behaviour of three lines – C IV λ1550, C II λ1334, and Si IV λ1393 – is shown in Figs 8, 9, and 10, as a function of the strength of C IV 1548. The doublet ratio does not converge to 1 (Fig. 8) at large equivalent widths, consistent with the spectroscopic observations that strong lines of C IV consist of many adjacent components, each not strongly saturated, in general. The occurrence of systems with a doublet ratio greater than 2 (the physical limit) arises from the uncertainty of measurement of the two divided equivalent widths. Fig. 9 shows a rather remarkable effect, that in the published sample of high-quality systems, C II is preferentially detected in the weaker C IV systems. Many C II systems are lost in Lyman α forest. Si IV is generally weaker than C IV (Fig. 10), but there is a wide range of ratios observed for the weaker lines, certainly not a constant ratio as found, for instance, by Pettini & West (1982) for a more restricted data set and a more restricted z. The stronger C IV systems may approach a relationship W_λ(Si IV) = 0.6 W_λ(C IV).

For Mg II, the doublet ratio covers the range 1–2 at low W_λ, but does converge to ~ 1 for strong lines. Therefore, saturation is important in the individual components of multi-component systems of Mg II (see Fig. 11).

3.3 *dM/dz* and lensing test

For C IV, Si IV, Si II, and Mg II, we compared the number of detected systems in various redshift bins with the total coverage of the bin in all spectra. The result is a plot of dM/dz as a function of z, where M is the number of detected systems (in some papers in the literaure, the notation dN/dz is used instead of dM/dz. We use 'M' to distinguish it from the column density symbol 'N'). In Fig. 12, solid squares represent C IV, crosses represent Mg II. There is about one Mg II absorber per unit z toward any QSO, on average from $z = 0.2$ to 2. For C IV, there are twice as many absorbers per unit z near $z \sim 1.8$, but the number drops rapidly at larger z values. By $z = 3$, the number of C IV systems is as small as for Mg II near $z \sim 1$. At $z > 3.5$, there are few systems (Steidel, Sargent & Boksenberg 1988; Steidel 1990; Khare *et al.* 1989). The precipitous drop in number of C IV systems near $z \sim 1$ is suspicious, occurring just where C IV begins to be observable from the ground because of redshift. The effects of incompleteness are, in principle, taken into account in a plot of dM/dz. Perhaps the lower-z C IV systems are not identified in the Ly α forest of numerous QSOs with $z > 2$. The deficiency could be explained if there were one or two doublets unrecognizable in the Ly α forest from 3000–3799 Å in most QSOs,

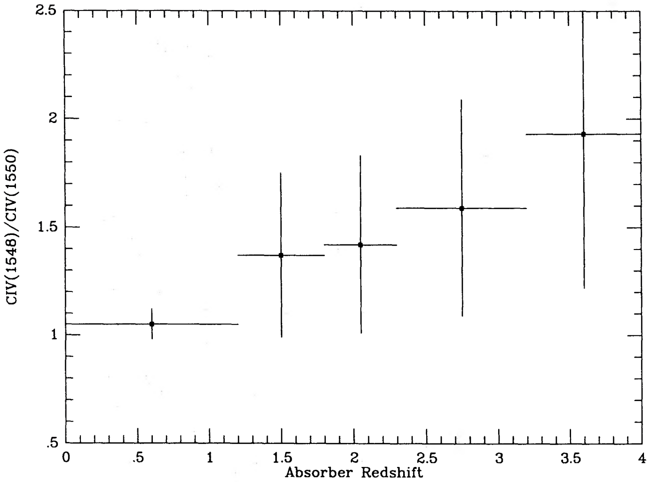

Figure 4. The ratio $W_\lambda(1548)/W_\lambda(1550)$ as a function of redshift for 262 C IV doublets. Horizontal bars through each point show the bin size in redshift. Vertical bars show the rms (1σ) range of doublet ratios in the given bin. The points themselves are the average doublet ratios in each designated range of redshift.

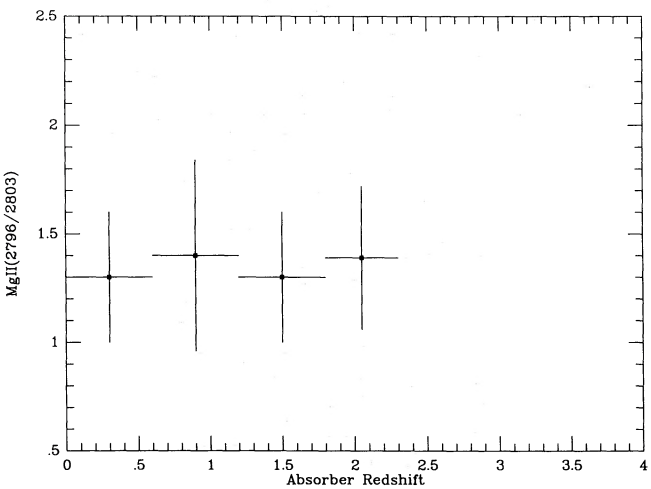

Figure 5. As for Fig. 4, for 131 Mg II doublets.

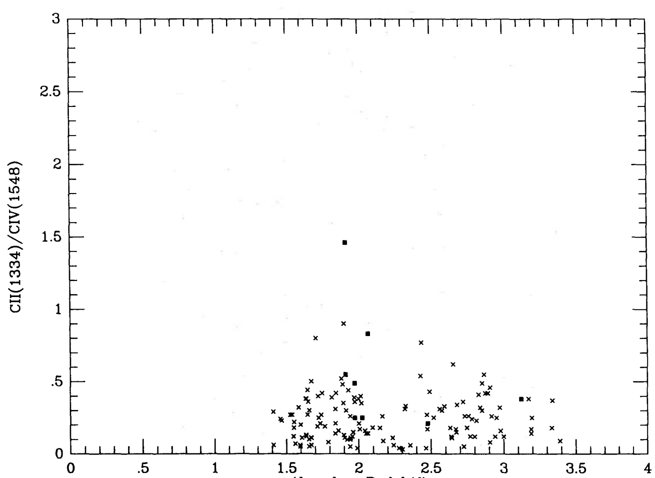

Figure 6. As for Fig. 4, but for C II(λ1334) and C IV(λ1548), in 140 systems of class A and B. Detections of both components are marked with squares; where only C IV was detected, but redshifted C II λ1334 was in the observed window, an upper limit is marked with a cross.

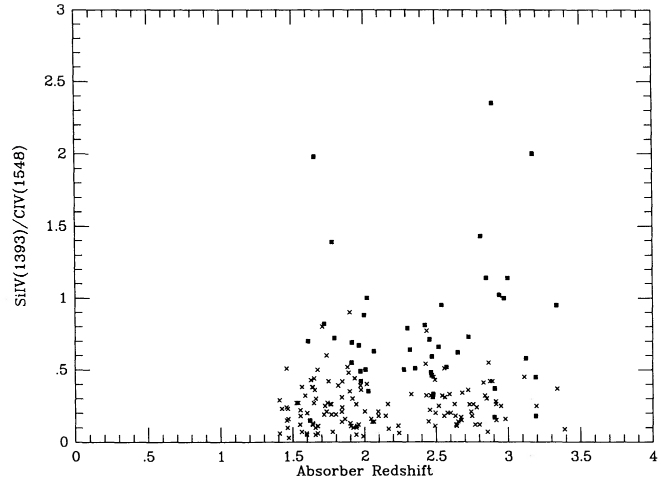

Figure 7. As for Fig. 4, but for Si IV (λ1392) and C IV, in 183 appropriate systems.

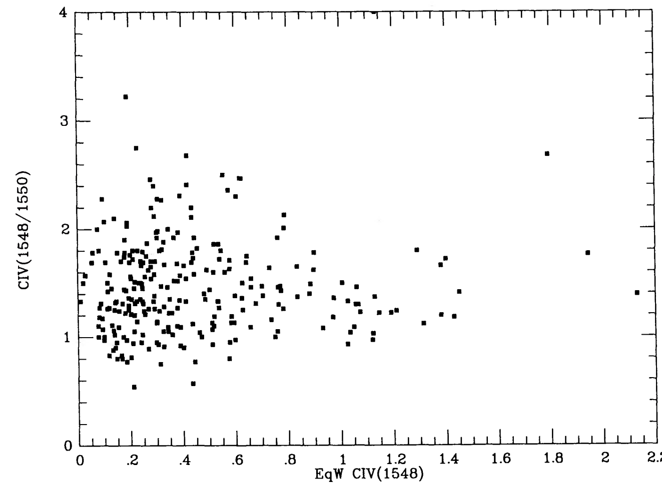

Figure 8. Doublet ratio for C IV ($\lambda\lambda$1548, 1550) compared with the equivalent width of C IV 1548, for 262 systems where all values are available, and the quality grade is A or B.

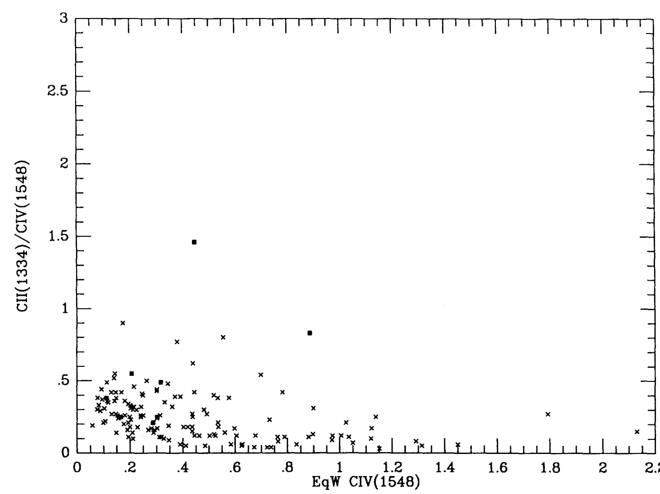

Figure 9. As for Fig. 8, but for W_λ(C II λ1334)/W_λ(C IV λ1548), for 140 systems. Upper limits on a C II detection are marked with crosses.

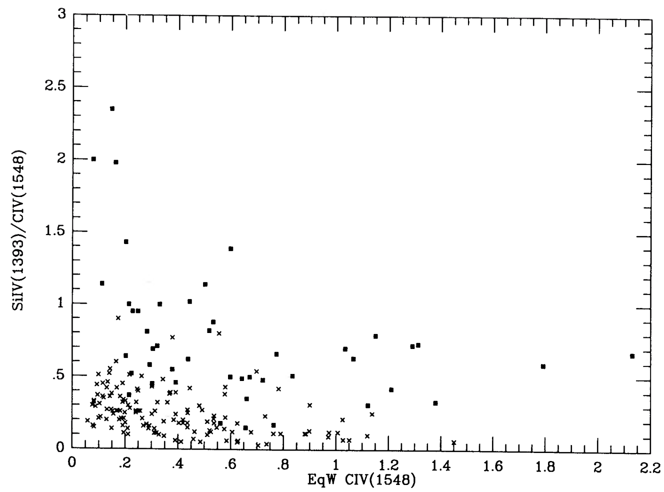

Figure 10. As for Fig. 8, for W_λ(Si IV λ1393)/W_λ(C IV λ1548). Upper limits on a Si IV detection are marked with crosses.

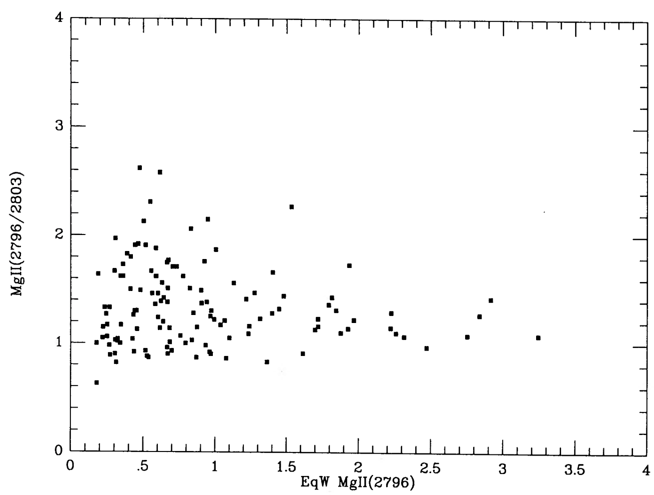

Figure 11. Doublet ratio for Mg II compared to the strength of Mg II λ2796, for 131 systems.

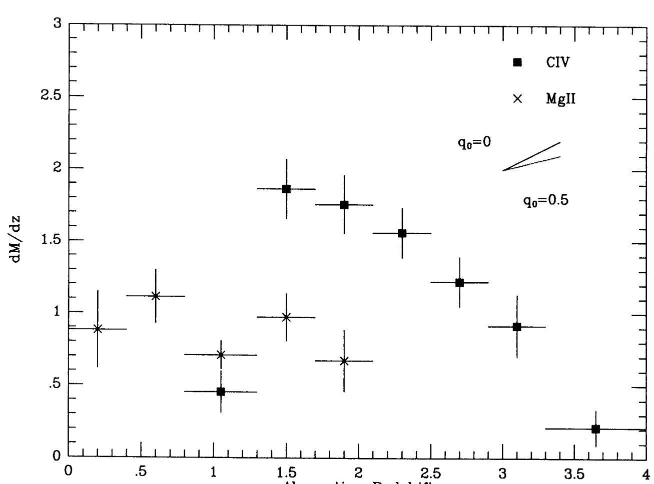

Figure 12. Number of systems, M, per unit z as a function of z for C IV (squares) and Mg II (crosses), derived from the number of detected grade A and B systems in each bin compared to the total range Δz observed in all QSOs for each bin (Fig. 1). These data represent a total of 465 systems.

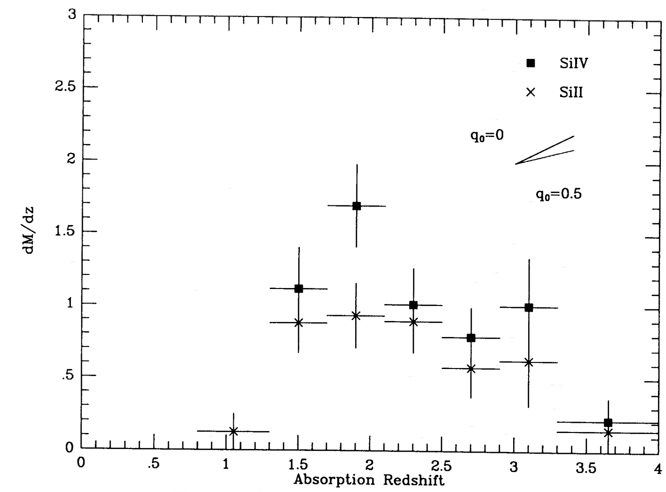

Figure 13. As for Fig. 12, for Si IV (squares) and Si II (crosses) in a total of 158 systems.

a region that would typically include 70-100 Ly α lines. A similar effect might partially explain the dearth of C II detections in C IV systems, compared to the high detection rate of Mg II in C IV systems.

Referring now to silicon lines (Fig. 13), Si IV (squares) shows the same decrease in dM/dz as noted for C IV, somewhat less well defined statistically. Once-ionized silicon (Si II 1526), on the other hand, overlaps in observability with Mg II, and shows a continuing flat dM/dz versus z behaviour to $z = 2.5$, then drops to near zero at $z > 3$.

The data for silicon are consistent with the interpretation given above for carbon: the lower dM/dz is expected at high z if the elements are being built up as z decreases. The earlier result that lines of Si are relatively stronger at high z, and more numerous, could be a sign that Si builds up faster than C in the early stages of galaxy formation. A much larger sample is required, but the present trends suggest that obtaining such a sample is justified for the details it may reveal about the early Universe.

To check that dM/dz actually represents a measure of cross-section of the absorbers, as is normally assumed, one must determine what fraction of absorbers come from lensed systems. If there is a correlation between presence of an absorber and a lensing mass, the natural observing bias to study bright objects will leave such cases over-represented, so dM/dz in our sample represents only an upper limit to the true cross-section or space density of the absorbers. To put it another way, quantitative measures of dM/dz show it to be in excess of that expected for cross-sections of absorbers due to the lines-of-sight which intercept only discs of galaxies (Bahcall & Spitzer 1969; Burbidge *et al.* 1977). Recent spectra of emission line objects near QSO absorbers show there to be many more emission line objects than expected from present-day galaxy number counts (Yanny 1990). One way to answer the question of whether or not this excess of absorbers is due to some selection effect or represents an actual increase in the number of absorbing objects (galaxies or galaxy pieces) at moderate redshifts ($0.5 \lesssim z_{abs} \lesssim 2$) is to consider the possibility that quasars with absorbers are selectively lensed by the absorber, increasing their apparent magnitude and thus making them more likely to be observed.

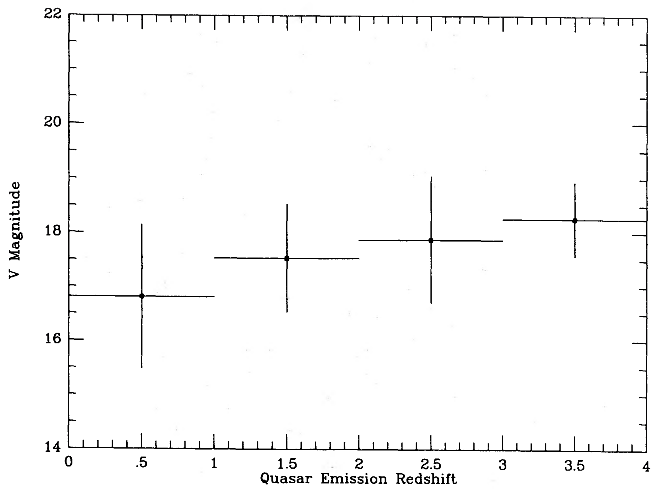

Figure 14. Emission redshift versus V magnitude for 261 QSOs which have grade A or B absorption line systems in their spectra.

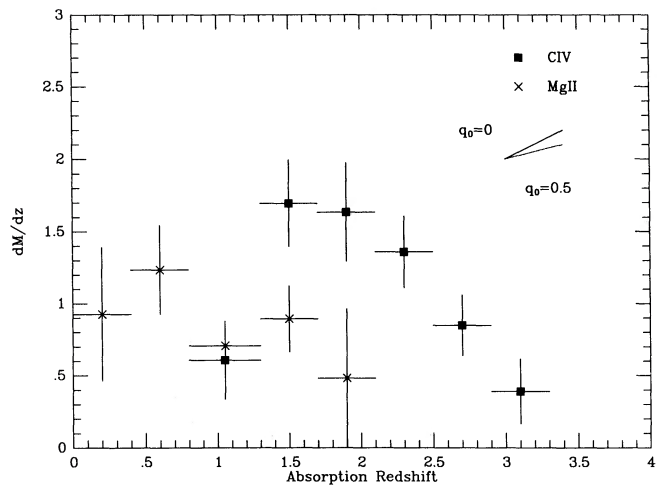

Figure 16. As for Fig. 12, but for grade A and B systems in the faintest half of the quasars in the sample of Fig. 12, involving 172 systems. (172 + 250 < 465 because some QSO/BL Lacs have unpublished magnitudes and were left out of the bright/dim split.)

Fig. 14 presents quasar V magnitude versus emission redshift. A least-squares fit to the data points yields a best-fit straight line of $V = 0.47 z_{em} + 16.68$. This relation was used to divide all quasars into two groups, those brighter and those dimmer than the given relation. The dM/dz test was repeated for bright and dim QSOs separately (Figs 15 and 16). If the apparent magnitude of QSOs is substantially brightened due to intervening absorbers causing gravitational lensing (Yanny 1990), then the bright QSOs should show significantly more absorbers per unit redshift than dim QSOs, all other things being equal.

A raised hump in dM/dz at $z \sim 0.6$ is expected as well, due to the peak in QSO number counts near $z \sim 2$ and the relative probability of lensing with source and lens redshift (Turner, Ostriker & Gott 1984). This test is similar to the test Sargent, Boksenberg & Steidel (1988, fig. 12) applied to their homogeneous sample.

There is a larger total sample of absorbers in bright QSOs (250 compared to 172), but there is no excess of absorbers beween $z = 0.4$ and $z = 2$ in the bright sample compared to the faint sample. However, at high redshifts, near $z = 3$, there is a rise by a factor of 2 in the number of absorbers per unit redshift in the bright sample, compared to the faint sample. The effect is less pronounced if one chooses a cutoff of beta > 0.015 rather than beta > 0.05. Many of the high-z QSOs may have been found because they are lensed and thus easier to see than would be the unlensed, faint QSOs. Evidently, a sample about 4 times larger is needed to test the lensing hypothesis, assuming that some objects in the current sample are unlensed. If all QSOs in the present sample are lensed, then statistical arguments must be based on data from a much fainter sample of QSOs, that might include unlensed objects.

We point out that recent work on galaxy number counts with redshift information shows that, independent of absorber (or quasar) presence, there appears to be an excess in the number of galaxies present at moderate redshifts, $0.2 \lesssim z \lesssim 0.5$ (Colless *et al.* 1990), when compared with $z \sim 0$ data.

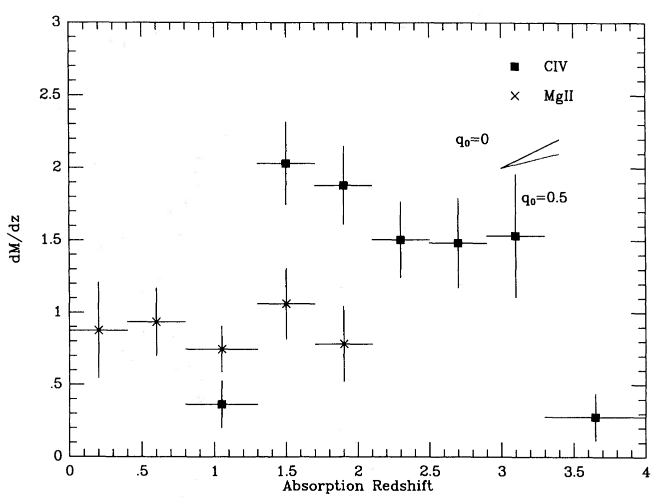

Figure 15. As for Fig. 12, but for grade A and B systems in the spectra of the brightest half of the quasars in the sample of Fig. 12, involving 250 systems. All systems have beta > 0.05.

3.4 Characteristic separations of redshifts

Broadhurst *et al.* (1990) show that galaxies with $z \lesssim 0.5$ at the North and South Galactic Poles (NGP and SGP, respectively) appear to be clumped in redshift space, if a cone of < 1° is chosen for study. The coherence of this pattern over wider angles is not yet known. In principle, the absorbers represent a sample of galaxies available out to $z \sim 4$ that can be used for similar studies. Fig. 17 is a plot for absorbers in a 20° cone (NGP, SGP) with Earth at the apex. Redshift separations have been converted to proper distance using the relationship $D = (c/H_0)(\Delta z)/(1+z)/(1+2q_0 z)^{1/2}$, and assuming $q_0 = 0$. We have not corrected for the fact that over a 20° cone, the angular separations between quasars gives an additional significant distance term to be added to the perpendicular distance separations [see Crotts (1985) for a similar study that includes the angular separations]. The location of the Broadhurst *et al.* peaks are marked with small vertical bars. Whereas Broadhurst *et al.* have 7–20 objects

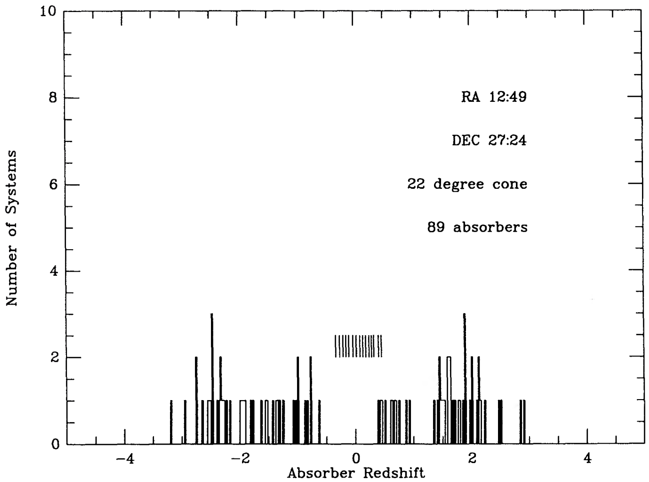

Figure 17. Histogram of grade A and B absorbers in redshift space (see text) in a 20° cone at the North Galactic Pole (positive abscissa) and at the South Galactic Pole (negative values). The NGP is centred near 12:49^h, 27°, the value chosen here as the centre of the 20° cone. Small vertical bars mark the locations of the Broadhurst *et al.* galaxy peaks ($q_0=0$, $H_0=100$ h km s^{-1} Mpc^{-1}).

per 130-h^{-1} Mpc bin, we have less than 3 per 200-h^{-1} Mpc interval, so statistical fluctuations probably dominate the distribution observed. A sample size 5–10 times larger would be needed to see if the Broadhurst *et al.* result continues to high z, or if characteristic separations at larger scales show up at greater distances.

Contrary to the case of known samples of moderate-z galaxies, such as those in the Broadhurst *et al.* sample, the absorber sample does fill the entire sky away from the galactic plane. We can look for typical pair-wise separations in this larger sample, ignoring phase in spatial frequency by autocorrelating the distribution corresponding to Fig. 17 for the entire sky (Fig. 18a). Fig. 18(b) shows the result for the NGP/SGP sample of Fig. 17. The remaining frames of Fig. 18 shows similar plots for 20° cones, selected only on the basis of having large total QSO absorber samples along those cones. The general downward slope of the frames of Fig. 18 is caused by the absence of data between $D=\pm 1500$ h^{-1} Mpc (see Fig. 17) and by the cut-off at ~ 3000 h^{-1} Mpc in the data. The figures show little evidence for clustering on very large scales (200–600 h^{-1} Mpc) in some directions, but much more data is needed. There is some evidence for clustering on smaller scales (30–50 h^{-1} Mpc) as noted in galaxy redshift surveys.

4 FINAL REMARKS

While, for many purposes, homogeneous samples are best for characterizing properties of the absorbers, this inhomogeneous catalogue has the advantage of yielding a much larger database, and of including various selection effects of different workers, both in choice of QSOs to study and in identification of systems. Some of the main features of the sample have, in fact, shown up in previous studies, but we summarize the features here since it encompasses the larger sample.

(i) In general, the properties of the absorbers are independent of z, a wide distribution of ionization states occurring at all zs.

(ii) The two trends with increasing z that seems secure are the decrease of the C IV doublet ratio and the drop in number of systems per unit z.

(iii) When different ions of a species occur simultaneously, a wide range in ion ratios occurs.

(iv) The distribution of equivalent widths, integrated over all z, is not exponential, rather it has a long tail in Mg II, and may have additional irregularities in C IV and Mg II.

(v) Many systems have cloud velocity spreads in excess of that observed on long halo sight-lines through our Galaxy, but higher-velocity-resolution studies on halo lines, using distant AGN as background sources, for example, are necessary to quantify this fact.

(vi) In general terms, the stronger the C IV line strengths, the lower the relative strengths of Si IV and C II. Weak C IV systems are more likely to have relatively stronger Si IV and/or C II.

(vii) The number of systems per unit z is ~ 0.8 for Mg II and Si II ($z<2$) and about twice that for C IV. At $z>2.5$, the

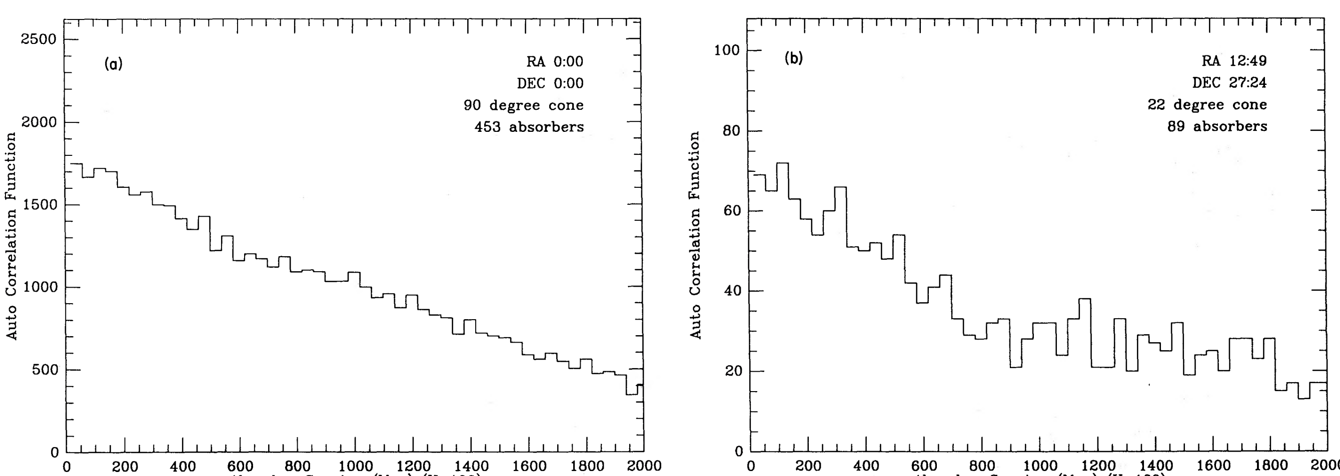

Figure 18. Autocorrelation for systems with grade A or B, in subsamples according to direction. (a) Is for the entire QSO sample (grade A and B systems); (b)–(g) are for 20° cones in various directions, labelled on the graphs. (b) Is the NGP/SGP sample used to make Fig. 17.

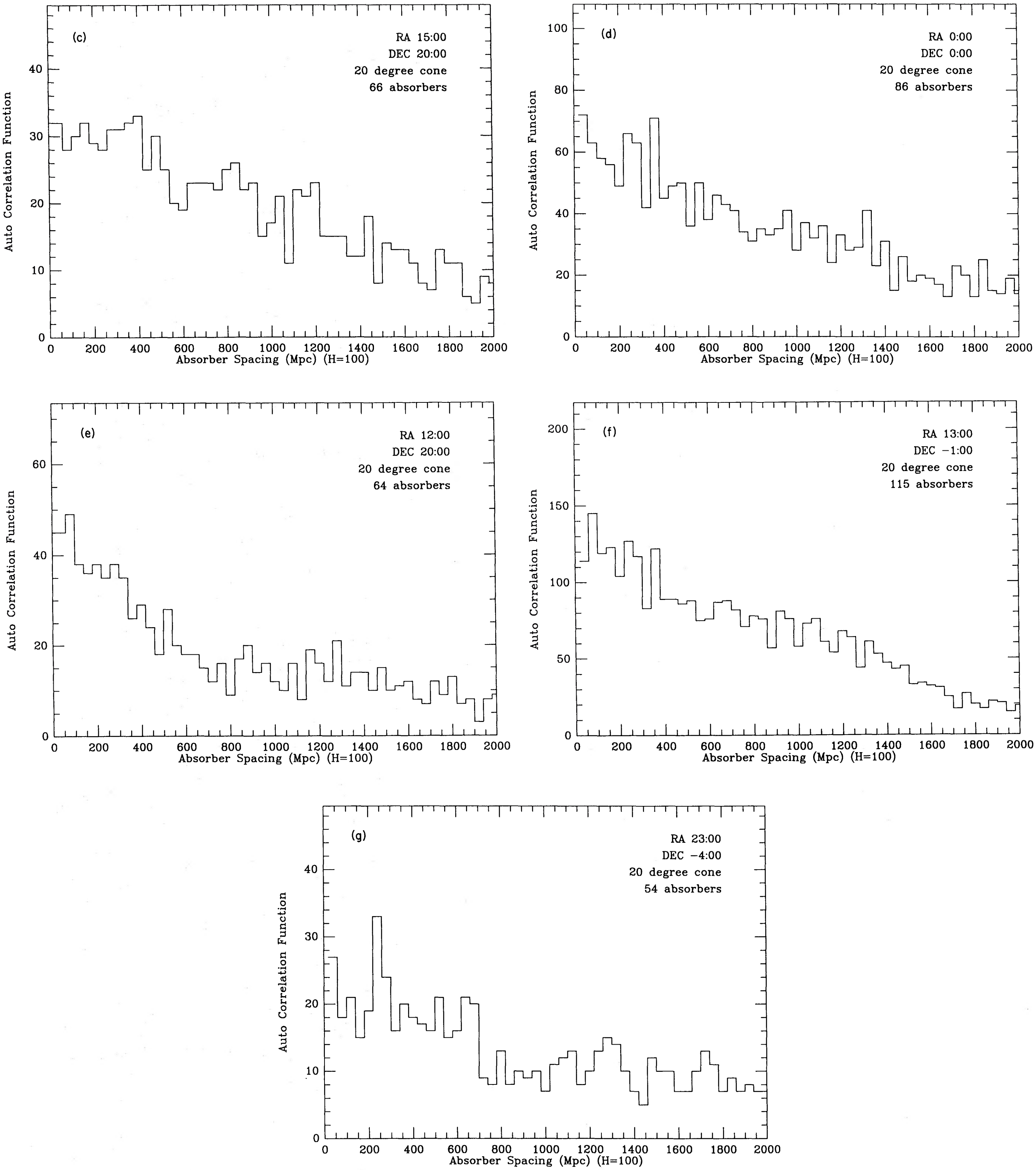

Figure 18 – *continued*

number of C IV systems per unit z drops by at least a factor of 3, going to zero (for an admittedly small sample) at $z \sim 4$. The number of Si II systems drops at $z > 3$, but not by so large a factor as for C IV.

(viii) There is little evidence for clustering on very large scales (300–600 h^{-1} Mpc).

(ix) There is a hint that bright QSOs have an excess of absorbers from $z = 3$ to $z = 4$, possibly attributable to lensing of the QSO by material in the intervening absorber. However, a sample of at least a thousand absorbers would be required to confirm the effect at the amplitude suggested by this data.

Further research on the absorbers would clearly benefit from much larger samples, to study large-scale structure in the Universe at high redshift, to further identify trends with redshift in absorber properties, and to resolve the issue of lensing (in a fainter sample). As noted earlier, the trends at the lowest redshifts cannot be explored because of the dearth of data below λ3000 Å. Results in this region promise to further increase our understanding of low-z galaxy evolution. Finally, in view of our conclusions (ii) and (vi), concerning trends with redshift in C IV and Si IV, it appears that high-resolution, high-signal-to-noise studies should be fruitful, especially to explore general abundance trends and radiation field trends, with redshift. A perusal of lists of the available lines suggests that detailed studies, in the same redshift systems, of Mg II and Mg I; of Si II, Si III, and Si IV; and of C I, C II, C II*, C III, and C IV, would be useful for ionization field evaluation. Unambiguous abundance trends must be measured free of ionization influence, as for Ni, Zn, Cr, and Fe (Meyer, Welty & York 1989), or coupled with studies of the radiation field (Viegas & Gruenwald 1991; York *et al.* 1991). Ideally, the resolving power achieved by Pettini *et al.* (1991) for an elegant study of Lyman forest lines should be applied to these problems.

This catalogue has been compiled over nearly a decade. It's publication has been delayed because, in using it, various errors showed up that suggested better ways of making the compilation. While the literature search and transcription have been checked several times, by different co-authors, it is inevitable that errors remain. The authors would be grateful if users of the catalogue would point out errors to DGY, for incorporation into a revised edition. Preprints including new work on absorbers would also be appreciated. Expert users will find particular systems missing altogether, and we would like to have these pointed out to us, as systems sometimes are published in isolated papers that would not be recognized as appropriate by the searching of literature indices.

While we feel it is useful to have a compilation such as this for finding classes of systems and for carrying out statistical studies, the user should usually consult the primary literature about any particular system listed herein, to assure himself of the reality of a system, or to gather comments or reservations of the original authors.

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An inhomogeneous reference catalogue of identified intervening heavy element systems in spectra of QSOs

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Table 1
Strengths for Selected Absorption Lines in Intervening Systems

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
0.0000	1101 − 264	0.82	145	C										B†5.80x	B†5.80x	x	x	x	x
0.0000	1226 + 023	0.15	120	B	†S5n	S3n	S3n	n	n	n	n	n	n	n	n	n	n	n	n
0.200	2135 − 147	0.00	185	B	m	B2.08p	B2.08p	m	m		m	m	m				m	m	m
0.213	0254 − 3342	0.70	155	B										†2.23k	†1.73k	k			
0.213	0254 − 334R	0.70	155	C										B†8.24k	B†8.24k	k			
0.2378	0952 + 179	0.60	199	B										0.67j	0.44j	j			
0.2413	0958 + 551	0.66	207	C										0.55g	0.38g	g			
0.2585	1011 + 250	0.63	67	B										S3r	S1r	r		r	r
0.2644	1700 + 518	0.02	191	B										S0l	S0l	l		l	l
0.2697	1700 + 518	0.01	191	B										S0l	S0l	l		l	l
0.2710	0854 + 191	0.68	207	B										B0.80d	B1.50e	0.53e			
0.282	2201 + 315	0.01	39	B										B S0q	B S0q	q		q	q
0.3169	1136 + 122	0.79	212	C										†2.66i	†1.53i	i		i	i
0.3290	1623 + 2689	0.75	207	C										†1.01c	†0.65c	†0.53c		c	c
0.351	1510 − 089	0.01	175	B										S0o	S0o	l			
0.35635	1101 − 264	0.69	180	B										†0.22a	†0.19a	a		a	a
0.35904	1101 − 264	0.69	180	B										†0.25a	†0.21a	a		a	†0.11b
0.35922	1101 − 264	0.69	180	A										†0.24a	†0.19a	a		a	†0.10b
0.3672	1715 + 535	0.64	207	B										0.39c	0.21b	c			
0.3678	0836 + 113	0.76	212	B										†4.19k	†2.78k	k			
0.3715	1756 + 237	0.59	199	C										0.14b	0.09b	b		b	b
0.3722	0229 + 131	0.67	207	B										0.34c	0.21c	c			
0.3882	0150 − 202	0.67	207	C										0.50b	b	b			
0.3892	0150 − 202	0.67	207	C										0.19b	0.32b	b			
0.3930	1209 + 107	0.68	152	B										1.01g	0.54i	h		h	h
0.395	1229 − 021	0.36	190	A										2.22l	1.94l	0.43j		0.65l	1.51m
0.3996	0348 + 061	0.65	207	C										0.43e	0.54g	f			
0.401	1912 − 550	0.00	166	B	o	B1.86o	B1.86o	o	o	o	o	o	o						
0.40117	1912 − 550	0.00	175	B										1.31g	1.01g	i	i	i	i
0.4152	0852 + 197	0.68	207	B										0.35d	0.30c	d			
0.4176	0229 + 131	0.65	207	A										0.67c	0.75c	B0.35c			
0.4234	0457 + 024	0.70	104	C										†0.77l	B†0.70l	l		l	l
0.424	0735 + 178	—	114	A										1.33c	1.05c	0.21c			
0.4272	0457 + 024	0.70	104	C										†0.70l	B†1.33l	l		l	l
0.4301	2128 − 123	0.05	130	B										S3i	S3i	i	i	i	i

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
0.4308	1226 + 105	0.68	104	B										†S5r	S4r	r			r
0.436	1243 − 072	0.43	116	B										B S0k	B S0k	k	S0k	S0k	S0k
0.4371	1511 + 103	0.52	199	B										0.45d	0.35d	d	d	d	d
0.4415	1038 + 064	0.43	87	B										S0i	S0i	i		i	i
0.4453	1346 − 036	0.68	152	C										†1.40k	†0.93k	j			
0.4466	0013 − 004	0.64	207	C										0.68f	0.43f	f			
0.4566	1421 + 330	0.60	199	C										0.17d	0.24d	d			
0.457	1354 + 195	0.16	130	B										S4i	S4i	i	i	i	i
0.4627	1226 + 105	0.67	104	C										S2r	S2r	r		r	r
0.4717	0457 + 024	0.68	104	A										0.34l	0.34l	l	l	†0.61l	†1.77l
0.4745	0454 − 220	0.04	175	A										S0l	S0l	S0l		l	l
0.483	0454 − 220	0.03	175	C										S0l	l	l		l	l
0.4940	0450 − 132	0.65	207	B										1.13f	0.72d	d			
0.4990	0824 + 110	0.65	104	B										0.87j	1.00j	j		†0.80j	†1.13j
0.5009	1329 + 412	0.59	207	B										0.27c	0.20c	c		c	c
0.5133	0955 + 326	0.01	99	B										0.13a				0.07a	B0.20a
0.5242	0235 + 164	0.24	88	A										1.61j	1.78j	1.33j	0.46j	0.56j	1.29j
0.5248	0827 + 243	0.24	89	A										S0n	S0n	n	n	n	S0n
0.5347	0109 + 200	0.13	139	B										B S0a	B S0a	a	a	a	a
0.5374	0824 + 110	0.64	104	C										0.65j	0.78j	j		j	0.33j
0.5505	0254 − 404	0.64	208	A										S0o	S0o	S0o			
0.5862	0848 + 163	0.55	207	B										0.44c	B0.38c	c	c	c	c
0.5903	0848 + 163	0.54	207	B										B0.38c	0.38c	c	c	c	c
0.6022	1347 + 112	0.68	212	A										†4.33f	1.98e	j		B†3.43k	†1.75j
0.6056	0843 + 136	0.53	199	B										0.47e	0.18e	e		e	e
0.6076	0843 + 136	0.52	199	B										0.60f	0.49g	f	f	f	f
0.6128	0058 + 019	0.54	207	A										1.70c	1.51c	0.35a	1.37c	b	b
0.6293	2351 − 154	0.67	104	B										B0.49e	0.25e	0.18e		e	e
0.6296	1209 + 107	0.59	152	A										2.91l	2.05k	k	1.93e	1.09k	1.50l
0.633	0420 − 014	0.16	139	B										S0a	S0a	a	a	a	a
0.6399	1246 − 057	0.59	93	B										0.73g	0.43g	g	B†2.56g	g	0.49g
0.642	1218 + 753	0.00	182	A										S0r	S0r	r		S0r	S0r
0.6577	0119 − 046	0.52	158	B										0.30b	0.18b	b	b	b	b
0.6637	0824 + 110	0.59	104	C										j	j	j	†0.90j	j	0.54j
0.6681	1222 + 228	0.54	152	B										0.36h	0.22h	h	h	h	h

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
0.6681	1222 + 228	0.54	207	B										0.43c	0.41d	d	d	d	d
0.672	0957 + 003	0.13	174	B										1.79a	1.32a	a	a	a	a
0.6924	1328 + 307	0.09	124	A										0.18j	0.18j	0.06j	S0j	0.12j	0.12j
0.70300	0805 + 046	0.68	148	B										0.70j	0.41j	j	†0.88j	j	†3.29j
0.7032	1311 − 270	0.57	152	C										0.97k	h	h	0.43i	h	h
0.7199	0119 − 046	0.49	158	B										0.23b	0.17b	b	b	b	b
0.7233	2342 + 089	0.66	207	B										1.48e	1.03d	d			
0.7261	0453 − 423	0.64	121	A										1.45a	1.10a	0.70a	†1.45a	0.75a	1.16a
0.7313	2343 + 125	0.61	207	B										B1.64d	1.36c	d			
0.7382	1517 + 239	0.47	207	B										0.30d	0.34e		d	d	d
0.7440	1331 + 170	0.51	207	A										0.87e	0.76e		0.37c	e	0.27d
0.7454	1331 + 170	0.51	207	A										0.91e	0.66e		e	e	0.34c
0.7520	2206 − 199	0.61	207	A										0.97d	0.77d	0.27b	†0.80e	e	0.72d
0.7555	1836 + 511	0.65	209	B										0.84h	0.81i	e			
0.7698	0846 + 156	0.66	209	B										0.59e	0.36d	e			
0.7703	1548 + 092	0.64	207	B										0.27b	0.31c	c		c	c
0.778	0029 − 414	0.06	162	B										B S0r	B S0r	r	r	r	r
0.7809	0150 − 202	0.52	207	B										0.36c	0.21c		0.28b	c	c
0.7877	0836 + 113	0.62	212	A										2.32j	2.17k	0.48j	†2.17j	j	1.04j
0.7890	1213 − 065	0.29	208	A										S0n	S0n	S0n	S0n	n	S0n
0.7899	2145 + 067	0.11	139	B										S0r	S0r	r	r	r	r
0.7952	2038 − 012	0.63	209	B										1.40j	0.85j	e			
0.797	0402 − 362	0.29	144	C								a		S0a	S0a	a	a	a	a
0.8032	0830 + 115	0.66	209	B										0.62f	0.24f	0.40g			
0.805	0642 + 449	0.71	58	C										j	†S0j	j	B†S3j	B†S3j	B†S3j
0.8068	0004 + 171	0.65	209	B										1.53f	0.68d	e			
0.8182	1836 + 511	0.63	209	B										B3.57k	0.73j	0.60j			
0.8366	0002 − 422	0.61	121	A										4.68a	4.03a	1.36a	†2.78a	1.69a	2.94a
0.8379	0239 − 154	0.62	209	B										0.32d	0.32e	e			
0.8380	2342 + 089	0.62	207	C										0.32b	0.25c	c			c
0.8464	0051 + 291	0.40	87	A										S0g	S0g		S0g	g	S0g
0.8466	0051 + 291	0.40	199	A													0.82b		
0.8474	2223 − 052	0.26	90	B										S0r	S0r	r	r	r	r
0.851	0235 + 164	0.05	69	B										S0r	S0r	r	r	r	r
0.8528	1327 − 206	0.16	176	A										B1.62m	B2.16m	m	0.70m	0.16m	0.76m

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
0.8529	0235 + 164	0.05	88	CD													0.73j	j	j
0.8543	0941 + 261	0.63	209	C										0.39f	0.40f	e			e
0.8596	0454 + 039	0.23	87	A										0.70g	0.75g		0.48g	0.38g	0.59g
0.8626	0041 − 266	0.65	214	B										0.67f	0.38e	e			
0.8632	2348 − 011	0.64	213	C										1.34k	0.70j	k			
0.8637	1836 + 511	0.62	209	B										0.90j	0.61h	e		e	e
0.87	1317 − 005	0.01	25	C										B S0r	B S0r	r	r	r	r
0.879	1308 + 326	0.06	90	B										0.22r	0.21r	r	r	r	r
0.8873	1623 + 2689	0.56	207	A										0.67b	0.48b	0.14b	0.16c	b	0.08a
0.8876	1623 + 2689	0.56	210	AD										B1.45e	0.55e	e	0.49e	e	e
0.8885	1623 + 2689	0.55	207	A										0.26b	0.27b	0.14b	0.14b	0.01a	0.13a
0.8897	1011 + 280	0.01	106	A										S0k	1.06k	k	0.95k	0.32k	0.74k
0.8958	2359 + 068	0.67	209	C										0.64c	0.98d	e		e	e
0.9060	0239 − 154	0.59	209	C										0.41e	0.49f	e		e	e
0.9087	0453 − 423	0.57	121	A										1.10a	1.05a		0.31a	a	a
0.9166	0830 + 115	0.62	209	C										0.54f	1.38f	j		0.91h	4.18i
0.9315	0731 + 653	0.63	209	B										0.82e	0.54d	e		e	e
0.9378	1226 + 105	0.49	104	B													S3r	r	S3r
0.9441	0528 − 250	0.58	207	B										0.44d	0.23c	d		d	d
0.9489	2342 + 089	0.58	207	C										0.32c	0.26b	c		c	c
0.952	1107 + 036	0.01	149	C										B3.53r	B3.53r	r	r	r	r
0.9530	0239 − 154	0.58	209	B										0.95e	0.44d	e		e	e
0.9539	1331 + 170	0.43	207	C													0.59d		
0.959	2142 − 758	0.09	97	B										S0r	S0r	r	r	r	S0r
0.95942	0805 + 046	0.59	148	B										0.97j	1.07j	j	†0.71j	j	0.20j
0.9942	0316 − 203	0.58	209	B										0.52e	0.27d	e		e	e
0.9954	2357 − 345	0.41	208	A										S0n	S0n	n	S0n	S0n	S0n
1.0066	0440 − 168	0.54	207	A										1.08d	1.25d	0.27c	d	0.75b	1.15c
1.0077	0440 − 168	0.54	207	A										1.07d	0.88d	0.16c	1.45c	B0.48c	0.74b
1.01450	0805 + 046	0.57	148	B								j		0.79j	0.79j	j	0.20j	j	j
1.0169	2206 − 199	0.51	207	A										0.93f	0.95g	e	0.52c	0.44d	0.56c
1.0201	0112 + 030	0.56	209	B										0.31e	0.38f	d	d	B1.61f	d
1.0250	0256 − 000	0.65	209	B										0.46b	0.24b	d	d	d	d
1.0260	2233 + 131	0.64	209	B										0.44g	0.23d	d	d	d	d
1.0262	0102 − 190	0.60	209	B										0.67d	0.69d	d	d	B1.16d	d

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
1.0328	2239 − 386	0.66	214	C										0.45f	0.31d	d		d	d
1.0347	0424 − 131	0.42	207	B		d	d					d	d				B2.04c		
1.0383	0143 − 015	0.61	209	B										0.64e	0.53e	e	e	e	e
1.0398	1623 + 2689	0.50	207	B								†0.29b					0.26a	0.52b	0.25a
1.04	1011 + 091	0.44	178	C										B S0q	B S0q	q	q	q	q
1.0436	0207 − 003	0.56	207	A										0.44b	0.47c	b	0.22a	b	0.18a
1.0445	0207 − 003	0.56	207	A										0.31b	0.16c	c	c	c	c
1.0463	2344 + 125	0.54	207	A										B0.78d	B1.03e	c	0.66c	0.48c	B0.68c
1.058	0056 + 126	0.01	55	B		B S0m	B S0m					m	m	B S0m	B S0m	m	m	m	m
1.0757	2341 − 235	0.54	209	B										0.46e	0.40e	d	d	d	d
1.0765	1037 − 270	0.40	202	AD										1.30b	0.72b	b	b	b	0.92b
1.0768	1037 − 270	0.40	195	A										1.11m	B1.06l	0.58j	0.67j	l	1.01l
1.0798	2348 − 011	0.58	213	C										0.73j	0.82j	0.13j		j	j
1.0842	0001 + 087	0.61	209	B										0.25c	0.24d	d	d	d	d
1.0907	0941 + 261	0.55	209	B										1.24h	1.07h	d	d	d	d
1.0957	2233 + 136	0.60	209	C										0.32c	0.61d	d	d	d	d
1.1083	0316 − 203	0.54	209	B										0.59e	0.31d	e	e	e	e
1.109	0024 + 224	0.00	130	C		S4f	S4f					f	f						
1.1109	0014 + 813	0.62	207	A										0.85b	0.66b	0.20a	†0.68c	1.90b	0.53a
1.1127	0014 + 813	0.62	207	A										2.47d	2.54d	0.40b	†2.23e	0.38a	2.14b
1.1174	0334 − 204	0.58	209	B										B2.06e	1.75d	e	e	0.52d	0.76c
1.118	1634 + 267A	0.32	173	C										B S0q	B S0q	q	q	q	q
1.125	0957 + 561A	0.13	151	B		0.47d	0.47d					d	d						
1.125	0957 + 561B	0.13	151	B		0.52d	0.47d					d	d						
1.1260	1836 + 511	0.53	209	B										0.63g	0.40f	d	d	d	d
1.1292	0146 + 017	0.54	209	B										0.94c	0.68c	c	c	c	c
1.140	2349 + 003	0.31	198	A										S0q	S0q	q	q	q	S0q
1.1465	0207 − 003	0.53	209	C										0.34c	B0.33c	c	c	c	c
1.1495	0453 − 423	0.49	86	A										4.65h	4.19h	0.84h	3.12h	1.72h	3.35h
1.1516	0453 − 423	0.49	121	BD													2.32a		
1.1536	0454 + 039	0.09	211	B										0.55c	0.24c	c			
1.1541	0454 + 039	0.09	87	B		S0f	S0f				f	f	f						
1.160	2349 + 002	0.45	198	A										S0q	S0q	q	q	q	S0q
1.1746	0450 − 132	0.38	207	B													1.04d		
1.1759	0029 + 073	0.59	209	B										0.68e	0.68d	d	d	d	B0.94c

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
1.1878	1101 − 264	0.35	185	B										0.41i	0.27i	i		i	i
1.1983	0256 − 000	0.60	214	A										0.99d	0.81d	d	†0.97e	d	d
1.2015	1246 − 057	0.36	93	C		e	e				e	†1.04e	e				0.41e	e	e
1.2033	1101 − 264	0.34	185	B										0.59i	0.36i	0.27i		i	i
1.2065	0958 + 551	0.22	103	C		0.14d	D0.54d				d	d	d						
1.2078	1332 + 552	0.02	85	B										S0j	S0j	j	j	j	j
1.2105	0958 + 551	0.22	103	C		B0.54d	B0.45d				0.14d	d	d						
1.2106	0058 + 019	0.28	88	C		†1.81j	†1.36j		j		j	j	j				j		
1.2142	0958 + 551	0.21	103	C		B0.45d	0.14d				d	d	d						
1.2224	0400 − 271	0.50	209	B										0.31d	0.30d	d	d	d	d
1.2321	1556 + 335	0.17	199	C		0.34d	0.30d				d	d	d						
1.2321	1556 + 335	0.17	200	CD		0.34d	0.30d				d	d	d	d	d	d	d	d	d
1.2401	1017 + 109	0.55	209	C										0.60g	0.71f	d	d	d	d
1.2448	0112 + 030	0.48	207	AD													2.39d	1.01e	2.39h
1.245	0058 + 019	0.27	88	C		†0.69j	†0.62j	j	j		j	j	j				j		
1.2453	0112 + 030	0.48	209	A										3.24f	3.02e	1.15f	e	1.60e	2.31e
1.2468	0642 + 449	0.59	209	B										0.60d	B0.52e	d	d	d	0.28d
1.254	0215 + 015	0.19	156	B		0.53d	0.40d				d	d	d	d	d	d	d	d	d
1.2560	0101 − 304	0.54	209	A										0.76f	0.71f	d	0.51f	d	d
1.2565	1055 − 045	0.07	199	B		0.43g	0.26e				f	f	f						
1.261	0058 + 019	0.26	88	C		†0.44j	j	†0.88j	†0.44j		j	j	j				j		
1.266	0029 + 002	0.34	26	C								h	h				1.19h		
1.2662	0449 − 135	0.53	207	BD													0.56b	b	b
1.2665	0449 − 135	0.53	209	B										1.28d	0.87d	0.28d	0.81f	d	1.58e
1.2722	0958 + 551	0.19	103	CD		0.40d	B0.53d	†0.13d	d		d	d	d						
1.2728	0958 + 551	0.19	207	B		0.44b	0.58c				c	c	c						
1.2734	1416 + 067	0.07	199	B		0.20e	0.17d				e	e	e						
1.2755	0836 + 195	0.17	199	B		0.25d	0.18d				0.28e	d	d						
1.2763	0958 + 551	0.19	103	BD		B0.53d	0.35d	d	†0.13d		d	d	d						
1.2773	0256 − 000	0.57	209	C										d	d	d	d	0.42c	0.20c
1.2780	0958 + 551	0.19	207	B		B0.58c	0.37c				c	c	c						
1.2844	0254 − 404	0.35	208	A										S0m	S0m	S0m	m	m	S0m
1.2853	0143 − 015	0.53	209	B										0.56d	0.33c	d	d	d	d
1.2878	0249 − 184	0.54	209	A										1.72e	1.39e	d	B1.45e	d	0.72c
1.2954	0854 + 191	0.23	207	B		B0.44b	0.54b				b	b	b						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586
1.2956	0201 + 365	0.49	209	B										0.75d	B0.82d	c	c	c
1.2973	0854 + 191	0.23	207	B		0.34b	B0.83c				b	b	b					
1.3007	0551 − 366	0.36	206	B										0.96j	1.05j	j		
1.3007	1228 + 077	0.37	206	C										0.96j	1.05j	j		
1.3012	0201 + 365	0.49	209	B										B0.82d	0.42d	d	d	d
1.3019	0854 + 191	0.23	207	B		B0.83c	B0.33b				c	c	c					
1.3036	0239 − 154	0.46	209	B										1.04f	0.89f	d	0.60d	d
1.3138	0046 − 315	0.44	206	B										0.68j	0.60i	j		
1.3197	1213 − 003	0.43	206	A										2.84j	2.23j	0.82i		
1.3250	1602 − 002	0.12	206	B										0.64g	0.45f	g		
1.3277	1331 + 170	0.27	59	C	c	B†2.32c	†1.20c	B†0.64c	B†0.30c		c	0.17c	c		B1.03c		0.64c	
1.328	0018 + 007	0.19	198	A										S0p	S0p	p	p	p
1.3281	0226 − 038	0.27	206	B										0.60g	0.41h	h		
1.3285	2044 − 168	0.23	206	B										0.50f	0.24f	f		
1.3289	0316 − 203	0.47	209	B										0.54d	0.61d	d	0.26c	0.27c
1.3383	1448 − 232	0.31	172	C		B†1.04l	B†1.30l	l	l		l	l	l					
1.3412	0054 − 284	0.59	209	B										1.36f	1.64f	f	f	f
1.3442	2359 + 003	0.47	209	B										0.78i	0.48g	h	h	h
1.345	0215 + 015	0.15	156	A		0.27a	0.30a				0.86a	0.78b	0.25a	1.88d	1.71d		1.92d	1.02d
1.3460	0836 + 195	0.14	199	B		0.33d	0.17d				d	d	d					
1.3485	2048 + 312	0.52	209	C										0.77h	0.98h	h	h	h
1.3525	0854 + 191	0.21	207	B		0.55b	B0.74b				b	b	b					
1.3554	0854 + 191	0.21	207	B		B0.73b	B1.56d				b	0.19b	b					
1.3558	0226 − 038	0.26	152	C		†S0h	†S0h				h	h	h					
1.3560	0958 + 551	0.15	207	B		B0.65c	0.11b				0.19b	b	b					
1.3586	1225 + 317	0.30	102	B	†0.55g	†0.34g	B†S2g	†0.64g	B†0.64g		B†S1g	g	B†1.31g	g	g	g	S1g	g
1.3603	1421 + 122	0.10	152	B		0.34g	0.31f				g	g	g					
1.361	1309 − 216	—	136	B	j	0.47j	0.38j	j	j		j	j	j	j	j	j	j	j
1.3610	1421 + 122	0.10	206	B										0.43h	0.34h	h		
1.3636	0017 + 154	0.24	67	C		B†S2a	B S3a		a		a	a	a					
1.3640	0237 − 233	0.30	207	CD		†0.46a	†0.40a				a	a	a				a	
1.3650	0237 − 233	0.30	152	AD		†1.43h	†1.53i				†0.65j	0.55d	h					
1.3651	0237 − 233	0.30	206	A										1.93c	1.69c	0.19c		
1.3654	0237 − 233	0.30	207	A		†1.06a	†0.82a				a	0.61a	a		. .		0.99e	
1.3733	0846 + 156	0.46	209	B										1.40d	1.10d	d	d	d

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
1.3751	1416 + 067	0.02	199	B		0.19c	0.17c				c	c	c						
1.3771	0958 + 551	0.14	207	C		0.14b	0.15b				b	b	b						
1.3781	0132 − 198	0.50	209	A										0.44d	0.34d	d	0.51c	0.37c	0.47c
1.3839	0856 + 170	0.03	199	B		0.26c	0.18c	c	c		c	c	c						
1.3855	0148 − 097	0.44	209	C										0.47e	c	c	0.47b	c	0.28c
1.3910	0957 + 561A	0.01	140	A										2.09m	1.88m	m	1.55m	0.79m	1.67m
1.391	0957 + 561A	0.01	151	B		0.21d	0.08d	d	d		0.71d		0.38d						
1.3910	0957 + 561B	0.01	140	A										1.97m	1.51m	m	1.34m	0.33m	1.05m
1.391	0957 + 561B	0.01	151	B		0.29d	0.21d	d	d		0.71d		0.42d						
1.3912	0957 + 561B	0.01	211	A										2.12b	1.97b	0.18c			
1.3913	0957 + 561A	0.01	211	A										2.12b	1.81b	0.20d			
1.4026	0316 − 203	0.44	209	B										0.92e	0.52e	e	e	e	e
1.4035	0029 + 073	0.52	209	B										0.18c	0.28d	d	d	d	d
1.4051	0352 − 275	0.43	209	A										2.75f	2.54f	d	d	1.10d	1.68d
1.4056	1247 + 267	0.23	207	B	a	0.09a	0.07a	a	a		a	a	a						
1.4066	1159 + 123	0.56	207	C										a	a	a	a	0.16a	0.10a
1.4076	1247 + 267	0.23	207	B	m	0.63a	0.42a	†0.22a	m		m	m	m						
1.4084	1247 + 267	0.23	152	BD		0.63d	0.44d				d	d	d						
1.4147	1517 + 239	0.18	152	B		0.76j	0.52j				j	j	j						
1.4156	0001 + 087	0.51	209	B										0.58d	0.43d	d	d	d	d
1.4205	0449 − 135	0.48	209	B										1.31j	1.07j	j	0.90f	j	j
1.4216	0237 − 233	0.28	152	C		†0.98g	†0.59e				f	f	f						
1.4216	0353 − 383	0.20	152	B		0.40h	0.24h				i	i	i						
1.4226	0836 + 195	0.10	199	B		B2.26e	B2.26e				e	e	e						
1.4229	1548 + 114B	0.18	186	B		0.54d	0.29d	d	d		0.25d	d	0.12d						
1.4236	0941 + 261	0.44	209	B										0.62g	0.45i	d	d	d	d
1.425	0232 − 042	0.01	144	C	a	B S0a	B S0a	a	a		a	a	a	a	a	a	a	a	a
1.4251	0836 + 195	0.10	199	C		B2.26e	B2.26e		e		e	e	e						
1.4314	0051 + 291	0.15	199	B		0.25d	0.20d				d	d	d						
1.4348	1416 + 067	-0.00	199	A		B4.26d	B4.26d	0.38e	e		e		e						
1.4380	1416 + 067	-0.00	199	A		B4.26d	B4.26d	0.46f	0.30f		f		f						
1.4389	1126 + 101	0.03	199	B	b	0.46c	0.36b	b	b		0.09b	0.131	b						
1.4398	0054 − 284	0.56	209	B										0.41f	0.23d	e	e	e	e
1.4408	1416 + 067	-0.00	199	A		B4.25d	B4.25d	0.22e	e		e		e						
1.4444	1756 + 237	0.11	199	B		0.12b	0.08a				b	b	b						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
1.4451	1308 + 182	0.09	199	B		0.30d	0.31e				e	e	e						
1.4462	1331 + 170	0.23	207	B		0.20b	0.15b					b	b						
1.4542	2000 − 330	0.58	214	B										0.19b	0.11b	B0.35c	d	d	B0.11a
1.4555	0421 + 019	0.21	157	B	a	0.15a	0.14a	a	a		a	a	a						
1.4570	1011 + 250	0.07	152	C		0.39h	0.38h				h	h	h						
1.4572	1011 + 250	0.07	199	B		0.22c	0.18d	d	d		d	d	d						
1.4573	0347 − 383	0.49	214	A										1.82f	1.27e	d	0.49b	0.33c	0.57c
1.4575	0848 + 163	0.17	207	B		0.08a	0.07a	†0.68a	†0.20a		a	a	a						
1.4592	1435 + 638	0.22	207	C		0.08a	0.10a				a	a	a						
1.4596	0453 − 423	0.38	86	C		g	g				g	g	g	1.71g	0.65g	g	g	g	g
1.46	1756 + 237	0.10	122	AD	†0.33p	1.10p	1.06p	0.69p	0.61p		0.37p	0.33p	p						
1.4614	1756 + 237	0.10	199	A		1.19b	0.98b				0.30b	0.39b	b						
1.4634	0837 + 109	0.51	207	C										0.38d	0.18c		d	d	d
1.4636	0058 + 019	0.18	207	A		0.51a	0.55a	†0.42b	†0.26a		0.10a	0.12a	a						
1.464	1258 + 286	0.17	130	C		S4e	S4e				e	e	e						
1.4642	0856 + 170	-0.01	199	B		0.53b	0.37b	b	b		b		b						
1.4648	0837 + 109	0.51	207	C										0.49d	0.34d		d	d	d
1.4652	0118 − 031B	0.23	194	A	†1.10l	0.73e	0.45e	e	e		†0.97d	1.14l	0.24e						
1.4670	1148 − 001	0.19	207	B		0.84c	0.61c				c	c	c						
1.4680	0151 + 048	0.16	207	B		0.29a	0.12b				b	b	b						
1.4684	0848 + 163	0.17	207	B		0.08a	0.08a	a	a		0.07a	a	a						
1.4698	0229 + 131	0.21	207	C		0.13a	0.09a				a	a	a						
1.4704	0848 + 163	0.17	207	B		0.70a	0.51a	a	a		a	a	a						
1.4716	1329 + 412	0.17	207	B		0.52c	0.32c				c	c	c						
1.473	1416 + 159	-0.00	130	C	e	B S4e	S4e	e	e		e	e	e						
1.4755	0854 + 191	0.16	207	C		0.15b	B0.16b	b	b		b	b	b						
1.4773	1101 − 264	0.24	154	C	e	0.25d	0.10c	e	e		e	e	e						
1.478	1416 + 159	-0.00	130	B	e	S5e	S5e	e	e		e	e	e						
1.4792	1435 + 638	0.21	207	C		0.17b	0.10a				b	b	b						
1.483	2345 + 006B	0.23	193	B		S0j	S0j				j	j	j						
1.4867	1222 + 228	0.20	152	B		0.18f	0.24f				f	f	f						
1.4867	1222 + 228	0.20	207	B		0.33b	0.31b				b	b	b						
1.489	1309 − 216	—	136	A	j	B3.82j	B3.82j	0.28j	0.32j	j	0.24j	j	j	j	j	j	j	j	j
1.4892	0334 − 204	0.47	209	C										d	d		d	0.30c	0.53d
1.491	0215 + 015	0.09	171	B		0.05a	0.03a												

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
1.491	1309 − 216	—	136	C	j	B3.81j	B3.81j	j	j	j	j	j	j	j	j	j	j	j	j
1.491	2345 + 006A	0.23	193	A		S0j	S0j				†S0j	j	j						
1.491	2345 + 006B	0.23	193	A		S0j	S0j				†S0j	S0j	S0j						
1.4922	1011 + 091	0.26	178	A		†S0p	p				p	S0p	S0p	B S0p	B S0p	S0p	S0p	S0p	S0p
1.5098	1126 + 101	0.00	199	B	a	0.12a	0.06a	a	a		a		a						
1.5103	0216 + 080	0.43	209	B										c			c	B0.96e	0.24d
1.5155	1311 − 270	0.25	152	B		†1.07c	†0.87d				d	d	d						
1.5163	1318 + 290	0.07	199	B		0.44c	0.25d				d	d	d						
1.5173	1126 + 101	0.00	199	B	a	0.94a	0.83a	a	a		a		a						
1.5190	0438 − 136	0.48	214	A										2.26k	2.06j	0.48f	0.72g	0.70c	1.10e
1.5239	1222 + 228	0.18	207	B		0.25b	0.24b				b	b	b						
1.5259	1448 − 232	0.24	172	C	c	0.18c	0.16c	c	c		c	c	c						
1.5263	0347 − 383	0.47	214	A										0.53e	0.60e	c	0.23b	c	0.18b
1.5264	0307 − 195A	0.21	170	A	†0.71g	0.44c	0.20c	c	c		c	c	c						
1.5269	0420 + 007	0.41	209	C													0.60d	c	0.55f
1.5322	0835 + 580	0.00	199	B		B1.32e	B1.32e		e		e		e						
1.5335	0055 − 269	0.54	214	A										0.32d	0.31c	c	0.14b	0.24b	0.17c
1.5347	0835 + 580	0.00	199	B		B1.32e	0.31c		d		d		d						
1.5367	1017 + 280	0.14	207	B	†0.11a	0.14a	B0 18a				a	a	a						
1.5378	0421 + 019	0.18	157	B	a	0.13a	B0.19a	a	a		a	a	a						
1.5417	0002 − 422	0.37	206	B										0.48d	0.32c	0.27f		d	d
1.5431	0835 + 580	-0.00	199	B		0.75d	0.72d		d		d		d						
1.54846	0215 + 015	0.07	171	BD		0.35a	0.27a				a								
1.549	0215 + 015	0.06	156	B	c	0.97c	0.72c	c	c		c	c	c				c	c	
1.5519	0424 − 131	0.21	207	B	a	0.11a	0.06a	a	a		a	a	a						
1.5527	0424 − 131	0.21	207	B	a	0.20a	0.11a	a	a		a	a	a						
1.5542	1213 − 003	0.35	206	A										1.84f	1.41f	0.33j		0.29g	0.72j
1.5586	2044 − 168	0.14	199	C		0.39f	0.47g				g	g	g						
1.5610	0013 − 004	0.18	207	B		B2.78e	0.64d				e	e	e						
1.5613	0151 + 048	0.12	207	A		0.22a	0.14a		a		a	a	a						
1.5615	0424 − 131	0.21	207	B	b	1.05b	0.96b	†0.14a	b		b	b	b						
1.5628	2120 + 168	0.09	199	B		0.37d	0.19d	d	d		d	d	d						
1.577	0018 + 007	0.09	198	A										S0o	S0o		o	o	S0o
1.5794	0143 − 015	0.44	209	B													0.47e	0.50d	0.63e
1.5839	1138 + 040	0.11	207	B		0.34a	0.33b				b	b	b						

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
1.5846	1448 − 232	0.21	172	A	c	0.36c	0.35c	†0.20c	B†1.17c		c	c	c						
1.5852	1421 + 330	0.11	199	B		0.14b	0.13b				b	b	b						
1.5880	1256 + 357	0.11	199	B		0.31e	0.17e				0.22e	e	e						
1.5925	1435 + 638	0.17	207	C		0.27b	0.12a				b	b	b						
1.5951	1017 + 280	0.12	207	B		0.14a	0.11a				a	a	a						
1.5959	0237 − 233	0.21	207	B	a	0.39a	0.42a	a	a		a	a	a						
1.5965	0237 − 233	0.21	152	BD		0.78e	0.71e	e	e		e	e	e						
1.5972	0237 − 233	0.21	207	B	a	0.49a	0.36a	a	a		a	a	a						
1.5977	0421 + 019	0.16	157	B	a	0.18a	0.12a	a	a		a	a	a						
1.5990	1011 + 250	0.01	67	CD	o	S3o	S3o	o	o	†S3o	o	o	o						
1.5999	1011 + 250	0.01	199	A	b	0.12b	0.08a	0.20d	b		b		b						
1.6009	1329 + 412	0.12	207	B		1.38c	0.83b				c	c	c						
1.6034	1556 + 335	0.02	199	C	a	0.16a	0.51a	0.17c	a		a		a						
1.6036	1556 + 335	0.02	200	CD	a	0.16a	B0.51a	0.17c	a		a	a	a	a	a	a	a	a	a
1.6081	1017 + 280	0.12	207	A		0.37a	0.24a	0.21a	0.15a		a	a	a						
1.6083	1548 + 114B	0.11	186	A	†0.50g	1.04c	1.00g	0.73c	0.65c		0.12c	0.54c	c						
1.6106	0237 − 233	0.21	152	BD		0.18d	0.13c	d	d		d	d	d						
1.6106	0237 − 233	0.21	207	C	a	0.20a	0.12a	†0.68a	a		a	a	a						
1.6106	1245 + 345	0.16	207	B		0.38b	0.23b				b	b	b						
1.6110	1556 + 335	0.01	199	A	0.50e	B1.18b	B0.97b	0.44c	0.30c		0.24b		c						
1.6115	1556 + 335	0.01	200	AD	B0.50e	B1.18b	B0.97b	0.44c	0.30c		0.24b	c	c	c	c	c	c	c	c
1.612	1756 + 237	0.04	122	BD	o	0.57o	0.34o	0.23o	0.19o		o	o	o						
1.6124	1556 + 335	0.01	199	B	b	1.18b	B0.97b	b	b		b								
1.6124	1556 + 335	0.01	200	BD	b	B1.18b	b	b	b		b	b	b	b	b	b	b	b	b
1.6126	0143 − 015	0.43	209	C													d	0.73e	1.17f
1.6137	1756 + 237	0.04	211	B										0.09b	0.03b	b			
1.6141	1756 + 237	0.04	199	A		0.46a	B0.50b	0.19b	0.19b		b		b						
1.6168	1756 + 237	0.04	199	B		B0.50b	0.08a	a	a		a		a						
1.6188	0151 + 048	0.10	207	A		0.66a	0.60a	0.10a	0.07a		a	B0.12a	a						
1.6216	0135 − 400	0.08	143	B		S2a	S2a				a	a	a						
1.6229	0824 + 110	0.22	104	B		1.94g	1.11g				0.50g	0.50g	g						
1.6250	0017 + 154	0.14	67	A	a	S3a	S2a	B†S2a	a		S2a	S4a	a						
1.6256	1225 + 317	0.20	102	BD	†0.11f	B0.46f	0.23f	B†S2f	†0.65f	†0.69f	f	f	f	f	f	f	f	f	f
1.6256	1225 + 317	0.20	152	B		0.58h	0.35f	g	g		g	g	g						
1.6266	1225 + 317	0.20	211	C										0.10c	c	c			

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586
1.6315	1225 + 317	0.19	211	C										0.08c	0.04c	c		
1.6330	1715 + 535	0.11	207	A		0.63b	0.50a				0.16a	a	a					
1.6333	1228 + 078	0.07	152	B	g	0.58g	0.61g	g	g		g	g	g					
1.6367	0237 − 233	0.20	206	C										0.38e	0.30e	e	e	e
1.6368	0421 + 019	0.14	157	A	†0.32b	0.52b	0.44b	B†0.22a	b		b	b	b					
1.6376	0421 + 019	0.14	211	B										B0.36c	B0.25c	c		
1.6378	0421 + 019	0.14	157	A	b	0.46a	0.44b	b	B†0.38a		b	b	b					
1.6387	0421 + 019	0.14	211	B										B0.36c	B0.25c	c		
1.6389	0421 + 019	0.14	157	A	a	0.15a	0.19a	B†0.97c	a		a	a	a					
1.6400	1556 + 335	0.00	199	C	b	B0.09a	B3.63c	b	b		b							
1.6445	1556 + 335	0.00	200	AD	b	B3.62c	B3.62c	0.19b	0.04b	b	B1.17b	b	b	b	b		b	b
1.6448	1556 + 335	0.00	199	A	b	B3.62c	B3.62c	0.19b	0.04b		b							
1.6454	1246 − 057	0.19	93	B	†0.26d	0.49d	0.30d	d	†1.47d		0.19d	d	d					
1.6478	1246 − 057	0.19	93	B	d	0.30d	0.26d	d	d		d	d	d					
1.649	0215 + 015	0.03	156	A	0.39c	0.76a	B0.38a	0.23c	0.15c		a	a	a				a	
1.6505	1556 + 335	0.00	200	B	c	c	c	c	c	c	c	c	c	B0.42b	0.25c		c	c
1.6512	0119 − 046	0.10	158	B	a	0.11a	0.08a	a	a		a	a	a					
1.6521	1556 + 335	-0.00	199	A	0.18c	B3.61c	B3.61c	B0.19b	B0.41b		c							
1.6524	1556 + 335	-0.00	200	AD	0.18c	B3.62c	B0.41b	c	B0.04b	c	c	c	c	c	0.17c		c	c
1.6535	1556 + 335	-0.00	199	A	0.38c	B3.61c	B3.61c	B0.73c	B0.41b		B0.96b							
1.6535	1556 + 335	-0.00	200	AD	0.16c	B3.61c	0.41b	B0.73c	B0.41b	c	B0.96b	c	c	0.63c	0.53b		c	c
1.6537	0151 + 048	0.09	207	A		0.16a	B0.48a	0.32a	a		0.12a	a	a					
1.6558	0151 + 048	0.09	207	A		B0.36a	a	a	B0.15a		B0.65a	a	a					
1.6563	0237 − 233	0.19	207	B	a	0.33a	0.36a	a	a		a	a	a					
1.6573	0237 − 233	0.19	152	AD	g	1.21g	0.73f	†0.99g	g		g	g	g					
1.6575	0237 − 233	0.19	206	A										0.56d	0.38d	c	c	0.27c
1.6576	0237 − 233	0.19	207	A	†0.43a	0.62a	0.46a	†0.82a	†0.62a		0.10a	B0.15a	a					
1.6581	0151 + 048	0.09	207	B		B0.48a	0.39a	a	a		a	a	a					
1.6588	0237 − 233	0.19	207	B	a	0.08a	0.04a	a	a		a	a	a					
1.6601	0151 + 048	0.09	207	A		B0.26a	0.11a	a	a		B0.59a	a	a					
1.6604	0237 − 233	0.19	207	B	a	B0.36a	0.05a	a	a		a	a	a					
1.6605	0731 + 653	0.40	209	B													0.94c	c
1.6606	1413 + 117	0.28	178	A	k	†S0k	†S0k	k	k		†S0k	S0k	k	k	S0k		S0k	S0k
1.661	1303 + 308	0.04	130	C		S4e	S4e	e	e		e	e	e					
1.6710	0237 − 233	0.18	207	B	†0.19a	0.31a	B0.42a	†0.15a	a		a	a	a					

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586
1.671	1303 + 308	0.04	130	B		S4e	S4e	S3e	S3e		e	e	e					
1.6721	1246 − 057	0.18	93	B	d	0.26d	0.15d	d	d	d	d	d	d					
1.6722	0237 − 233	0.18	152	AD	†0.57h	B1.10f	B1.04f	†1.21h	†0.47e		0.47f	0.51e	0.25d					
1.6723	0237 − 233	0.18	206	A										1.22d	0.86d	c	c	c
1.6724	0237 − 233	0.18	207	A	†0.52a	0.58a	0.52a	†0.45a	†0.33a		0.39a	0.60a	0.18a					
1.6729	0836 + 195	0.01	199	C	a	0.09a	0.16a	a	a		a		a					
1.6729	1318 + 290	0.01	199	B	b	0.16b	0.07b	b	b		b	b	b					
1.673	1756 + 237	0.02	122	BD	1.23o	2.10o	1.83o	1.08o	0.75o	†0.52o	1.35o	1.23o	0.45o					
1.6739	1756 + 237	0.02	199	B	b	B3.09b	B3.09b	b	b		b		b					
1.6740	0237 − 233	0.18	207	A	a	0.32a	0.22a	a	a		0.07a	0.07a	a					
1.6747	1756 + 237	0.02	211	A										2.83b	2.62b	0.56b		
1.6749	1756 + 237	0.02	199	A	b	B3.08b	B3.08b	1.02b	0.82b		1.12b		b					
1.6754	0237 − 233	0.18	207	B	a	B0.42a	0.21a	a	a		a	a	a					
1.676	1756 + 237	0.02	66	BD	S0n	B S0n	B S0n	n	n	n	n	n	S0n				n	S0n
1.6768	1756 + 237	0.02	199	B	b	B3.08b	B3.08b	b	b		b		b					
1.6778	1245 + 345	0.14	207	B		0.59b	0.53b		b		b	b	b					
1.68551	0215 + 015	0.01	171	B		0.02a	0.01a				a							
1.6865	1311 − 270	0.19	206	B										0.83j	0.40h	g		
1.6868	0146 + 017	0.36	209	B													0.69b	b
1.691	1303 + 308	0.03	130	B		S5e	S5e	S5e	S5e		e	e	e					
1.6915	0854 + 191	0.07	207	C	b	0.27b	0.21b	b	b		b	b	b					
1.6998	1115 + 080A	0.01	157	B	a	0.11a	0.11a	a	a		a	a	a					
1.7040	0307 − 195A	0.15	170	A	j	0.55j	0.22j	j	j	j	j	j	j					
1.7072	0843 + 136	0.06	199	B		0.21g	0.39g				g	g	g					
1.708	1303 + 308	0.02	130	B		S5e	S5e	S5e	S5e		e	e	e					
1.7129	0013 − 004	0.13	207	A		0.58d	0.72d	d	d		1.33e	d	0.21c					
1.7161	0424 − 131	0.15	207	B	†0.25a	0.35b	0.17b	†0.19a	B†1.14a	a	a	0.31b	a					
1.7183	1421 + 330	0.06	199	B		0.28b	0.17b				b	b	b					
1.7193	0100 + 130	0.29	77	C	†S0a	†S0a	†S0a	†S0a	a	†S0a	†S0a	S0a	†S0a	a	a	a	a	a
1.7199	1157 + 014	0.09	152	B	f	0.52f	0.28e	0.43g	f		f	f	f					
1.723	1756 + 237	-0.00	130	CD		S4e	S4e	e	e		e	e	e					
1.7234	1448 − 232	0.16	172	A	c	0.44c	0.39c	†0.18c	c	c	c	c	c					
1.728	1303 + 308	0.02	130	A	S3e	S5e	S5e	S5e	B S5e		e	e	e					
1.7283	1115 + 080A	-0.00	157	C	a	0.07a	a	a	a	a	a	a	a					
1.7304	1115 + 080A	-0.00	157	C	a	0.07a	a	a	a	†0.22a	a	a	a					

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586
1.7310	0958 + 551	0.01	207	B	a	0.49a	0.29a	a	a		a	a	a					
1.7318	0958 + 551	0.01	211	B										B0.29b	B0.18b	b	b	b
1.732	0254 − 3342	0.05	155	A	h	0.70h	0.40h	h	h	h	h	h	h					
1.732	1756 + 237	-0.00	122	B	o	0.44o	0.29o	o	o	†0.11o	0.07o	0.48o	o					
1.7321	0854 + 191	0.06	199	BD	c	0.27c	B0.45d	c	c	c	c	c	c					
1.7322	1115 + 080A	-0.00	157	B	a	0.37a	0.29a	a	a	a	a	a	a					
1.7323	0854 + 191	0.06	207	A	b	0.53c	B0.61b	b	b		b	b	b					
1.7325	2044 − 168	0.07	199	B		B1.04b	B1.04b		b		b	b	b					
1.7329	0958 + 551	0.01	207	A	B0.56b	0.52a	0.40a	0.51b	0.26a		a	a	a					
1.7331	0958 + 551	0.01	211	B										B0.29b	B0.18b	b	b	b
1.7339	0029 + 002	0.16	26	A	g	1.02g	1.10g	g	g		0.48g	0.66g	g					
1.7341	2044 − 168	0.07	199	B		B1.04b	B1.04b		b		b	b	b					
1.7343	1523 + 214	0.07	199	B		0.16c	0.20d	c	c		c	c	c					
1.7353	1115 + 080A	-0.00	157	B	a	0.26a	0.11a	0.07a	0.04a	a	a	a	a					
1.7355	2044 − 168	0.07	199	B		B1.04b	B1.04b		b		b	b	b					
1.7367	0854 + 191	0.06	207	A	B1.34c	B0.61b	0.26b	b	b		0.40c	B0.32b	b					
1.7370	0854 + 191	0.06	199	BD	d	B0.45d	0.18b	d	d	d	d	d	d					
1.738	0932 + 501	0.06	179	B		B S0a	B S0a				a	a	a					
1.7403	0119 − 046	0.07	158	A	a	0.15a	0.11a	a	a	a	a	a	a					
1.7444	0002 + 051	0.05	157	A	c	0.29c	0.24c	c	c	c	c	c	c					
1.746	1303 + 308	0.01	130	B		S4e	S4e	S4e	S4e		e	e	e					
1.7476	0551 − 366	0.20	152	B	e	0.44f	0.28e	e	e		e	e	e					
1.7529	0013 − 004	0.11	207	C		0.15b	0.23b	b	b		b	b	b					
1.7564	1548 + 114B	0.05	186	B	c	0.25c	0.22c	c	c	c	c	c	c					
1.7587	1715 + 535	0.06	207	B		0.17a	0.13a	a	a		a	a	a					
1.7597	1421 + 330	0.05	199	B		0.20b	0.15b	b	b		b	b	b					
1.761	0135 − 400	0.03	143	B		S3a	S3a				a		a					
1.763	1303 + 308	0.00	130	B		S4e	S4e	e	e		e	e	e					
1.7666	0150 − 202	0.13	207	B		0.17a	0.10a	a	a		a	a	a					
1.7667	1017 + 280	0.06	207	B	a	0.06a	0.03a	a	a		a	a	a					
1.7690	0216 + 080	0.35	209	B													0.75d	
1.7741	1151 + 068	0.26	212	A	†0.25c	c	c	c	c	c	†0.29c	0.47c	0.34c	0.52e	0.56d		0.49b	0.35b
1.775	1303 + 308	-0.00	130	C	e	S3e	S3e	e	e		e	e	e					
1.7751	1331 + 170	0.10	152	B	g	g	g	g	0.68f	g	g	g	g					
1.7756	1331 + 170	0.10	207	B		1.03b	0.77b	b	b		b	b	b					

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586
1.7760	1331 + 170	0.10	42	AD	†S0f	0.36f	0.36f	0.58f	S0f		0.54f	0.58f	0.29f	1.30f	B2.16f	f	B0.86f	B0.65f
1.7764	1331 + 170	0.10	152	AD	†1.30e	1.62f	1.40f	0.70e	0.68f	f	f	0.38i	f					
1.7766	1331 + 170	0.10	207	A		0.60a	0.62b	0.83c	0.47b		0.53b	b	0.27b					
1.7770	1331 + 170	0.10	211	A										1.23b	1.13b	0.27d		
1.7771	1331 + 170	0.10	206	AD										1.07e	e	0.20e	e	0.85d
1.779	0932 + 501	0.05	179	B		B S0a	B S0a				a	a	a					
1.7830	0135 − 400	0.02	143	B		S4a	S4a				a		a					
1.783	2146 − 133	0.01	11	B	o	B S0o	B S0o	B S0o	B S0o	o	o	o	o				o	o
1.7866	1331 + 170	0.10	211	A										0.97b	0.75b	0.13d		
1.7869	1331 + 170	0.10	206	AD										1.84f	0.61e	0.25e	0.65g	0.55c
1.7886	0307 − 195B	0.11	170	A	†1.72j	1.29c	0.72c	0.93j	0.86j	†0.97g	0.93j	0.97j	g					
1.7886	0424 − 131	0.13	207	C	b	0.24b	0.13b	b	0.13a	b	b	b	b					
1.7895	1136 + 122	0.32	212	C	a	a	a	a	a	a	a	a	a				0.15a	
1.7933	1523 + 214	0.04	199	A		0.25c	0.10b	0.14c	c		c	c	c					
1.7942	1225 + 317	0.13	74	AD	†S0k	B S0k	B S0k	S0k	S0k	†S0k	S0k	k	k					
1.7946	1225 + 317	0.13	128	A	g	B2.43g	B2.43g	1.15g	0.64g	g	0.47g	0.61g	0.21g	1.97g	1.61g	0.39g	0.61g	0.18g
1.7947	1225 + 317	0.13	211	B										c	c	c		0.33c
1.7950	1225 + 317	0.13	102	AD	†1.15f	1.50f	B0.97f	1.15f	0.64f	B†1.04f	0.50f	0.64f	B0.32f	1.97f	1.61f	0.39f	0.61f	0.18f
1.7951	1225 + 317	0.13	152	AD	†1.27j	1.51h	1.12g	1.25h	0.53e		0.52g	0.62h	h					
1.7956	1225 + 317	0.13	211	A										B1.99a	B1.65a	0.24a		a
1.7962	1225 + 317	0.13	211	BD										B1.99a	B1.65a	a		a
1.797	0100 + 130	0.27	72	B										S0h	S0h	h		h
1.7974	0100 + 130	0.27	77	B	†S0a	†S0a	†S0a	†S0a	†S0a	†S0a	†S0a	S0a	a	a	a	a	a	a
1.7976	0348 + 061	0.09	207	B		0.51c	0.45c	c	c		c	c	c					
1.7980	2120 + 168	0.00	199	B	b	0.09a	0.11b	b	b		b							
1.7984	1017 + 280	0.05	207	A	a	0.42a	0.30a	0.08a	a	†0.08a	a	a	a					
1.80	0058 − 270	0.03	188	B	o	B5.36o	B5.36o	o	o		o	o	o				o	
1.8041	1256 + 357	0.03	199	B		0.66e	0.54e	e	e		e		e					
1.808	0254 − 3342	0.02	155	B	g	2.49g	0.82g	g	g	g	g	g	g					
1.8091	1228 + 078	0.00	152	A	c	0.31c	0.15b	c	c		c	c	c					
1.8096	0846 + 156	0.32	209	C													1.54d	
1.8148	0122 − 380	0.12	154	B	e	0.39e	0.25e	e	e	e	e	e	e					
1.815	0254 − 3342	0.02	155	B	g	0.99g	0.78g	g	g	g	g	g	g					
1.815	0932 + 501	0.04	179	B		B S0a	B S0a				a	a	a					
1.8189	1151 + 068	0.25	212	A	†0.42f	†1.43g	†1.21e	g	g	g	g	B0.27d	0.27b				0.21b	g

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586
1.8226	0836 + 113	0.26	94	B	g	B†1.03g	B†0.63f	g	g		g	g	g	g	g	g	g	g
1.824	2136 + 141	0.19	201	B	o	B S0o	B S0o	o	o	o	o	o	o					
1.8265	0254 − 3342	0.01	155	A	g	B10.61g	B10.61g	0.85g	0.21g	g	g	g	g					
1.8266	0151 + 048	0.03	207	B	a	B0.11a	0.08a	a	a		a	a	a					
1.8293	0051 + 291	0.00	55	C	l	B S0l	B S0l	l	l	l	l	l	l					
1.83	0058 − 270	0.02	188	C	o	B1.77o	B1.77o	o	o		o	o	o				o	
1.831	0049 + 014	0.16	201	B	a	B S0a	B S0a	B†S0a	B†S0a	a	a	a	a					
1.8311	0135 − 400	0.01	143	B		S2a	S2a				a							
1.8322	0254 − 3342	0.01	155	A	g	B10.59g	B10.59g	0.71g	0.35g	g	g	g	g					
1.8326	0457 + 024	0.18	104	C	j	0.32j	0.18j	j	j		j	j	j					
1.8344	1017 + 280	0.03	207	B	a	0.10a	0.05a	a	a		a	a	a					
1.8344	1256 + 357	0.02	199	B	e	0.62e	B0.36e	e	e		e		e					
1.8357	1329 + 412	0.04	207	B	b	0.13a	B0.45b	b	b		b	b	b					
1.837	0958 + 731	0.08	133	B	o	B S0o	B S0o	S0o	o		o	o	o				o	o
1.8374	0254 − 3342	0.01	155	A	g	B10.57g	B10.57g	0.81g	0.28g	g	g	g	g					
1.83835	1101 − 264	0.10	180	A	†0.36a	0.10a	0.05a	a	a		a							
1.83870	1101 − 264	0.10	180	A	†0.08a	0.10a	0.10a	a	a		0.07a							
1.83905	1101 − 264	0.10	180	A	a	0.15a	a	a	a		0.07a							
1.8397	1101 − 264	0.10	185	C													0.28g	g
1.840	0932 + 501	0.03	179	B		B S0a	B S0a				a	a	a					
1.840	1101 − 264	0.10	154	AD	†0.46d	0.46d	0.25d	0.39d	0.28d	†0.70d	0.21d	0.28d	d					
1.8401	1329 + 412	0.03	207	B	b	B0.45b	0.13a	b	b		b	b	b					
1.8410	0348 + 061	0.07	207	B		0.39c	0.36d	c	c		c	c	c					
1.8424	0854 + 191	0.02	207	B	c	0.52c	0.24b	c	c		c		B0.81b					
1.8428	0854 + 191	0.02	199	BD	c	0.24c	0.12c	c	c	c	c		0.17c					
1.8434	1209 + 107	0.11	152	B	j	0.78j	0.62j	j	j		j	j	j					
1.8502	1038 − 272	0.15	205	A	B†0.94b	B0.39b	b	†0.57a	B†0.40a	†0.42c	b	b	b					
1.8550	0854 + 191	0.02	207	B	c	0.28b	0.32c	c	c		c		c					
1.8554	0854 + 191	0.02	199	BD	c	0.14c	0.11b	c	c	c	c		c					
1.856	0254 − 3342	0.00	155	B	g	0.28g	0.46g	g	g	g	g		g					
1.8581	0135 − 400	-0.00	143	B		S2a	S2a		a		a							
1.8605	0229 + 131	0.07	207	B	a	0.27a	0.21a	a	a		a	a	a					
1.8606	0123 + 257	0.16	63	C	e	e	e	e	B†S5e	e	e	e	e				e	
1.8607	0135 − 400	-0.00	143	B		S3a	S3a		a		a							
1.8622	0229 + 131	0.07	207	A	0.51a	B0.31a	0.29a	0.19a	0.26b		b	0.14a	b					

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
1.8672	0446 − 208	0.01	146	A	c	0.49c	0.31c	0.21c	0.00c	†0.63c	c		c						
1.87	0058 − 270	0.01	188	B	n	B3.48n	B3.48n	n	n		n	n	n				n		
1.8723	0017 + 154	0.05	67	C	a	S3a	B S3a	a	a	a	a	a	a						
1.874	1333 + 286	0.01	29	B	l	B S0l	B S0l	l	l	l	l	l	l						
1.8775	1634 + 176	0.01	199	B	d	0.51d	B0.78d	d	d		d		d						
1.8799	1634 + 176	0.01	199	B	c	0.11b	B0.88d	c	c		c		c						
1.8804	1623 + 2689	0.20	207	B	b	0.14b	0.11b	†0.55c	†0.16b	†0.14b	b	b	b						
1.8870	1225 + 317	0.10	102	BD	f	0.31f	0.21f	f	f	†S1f	f	f	f	f	f	f	f	f	f
1.8871	1225 + 317	0.10	152	B	e	0.34e	0.24d	e	e		e	e	e						
1.8894	1634 + 176	0.00	199	A	e	1.50d	1.50d	0.79f	0.57f		e		e						
1.8910	2225 − 055	0.03	26	C	j	j	j	S0j	S0j	j	j	j	j						
1.8925	1548 + 111B	0.00	186	A	c	0.48c	0.45c	0.35c	0.31c	†0.59f	c	c	c						
1.8936	1038 − 272	0.14	205	B	b	0.12a	0.14a	b	b	†0.31b	B0.39b	b	b						
1.894	1258 + 286	0.01	130	BD	d	S4d	S4d	d	d		d		d						
1.8944	1258 + 286	0.01	199	A		0.35d	0.22c	0.25d	0.17d		d		d						
1.8945	1256 + 357	-0.00	199	B	d	B0.89d	0.67c	d	d		d		d						
1.8968	1225 + 317	0.10	102	BD	†S1f	0.21f	B0.31f	S2f	B0.41f		f	f	f	f	f	f	f	f	f
1.8971	0551 − 366	0.15	206	A										1.72i	1.49h	0.52h	1.11j	0.52j	0.46j
1.8971	1228 + 077	0.16	206	A										1.72i	1.49h	0.52h	1.11j	0.52j	0.46j
1.8971	1256 + 357	-0.01	199	B	c	B0.89d	0.30b	c	c		c		c						
1.8975	1225 + 317	0.10	152	B	e	0.17e	0.17d	e	e		e	e	e						
1.898	1228 + 077	0.16	164	A	†0.76d	0.90d	0.55d	†0.48d	†0.52d		0.55d	0.66d	d						
1.8995	1256 + 357	-0.01	199	B	c	B0.67c	0.53c	c	c		c		c						
1.8996	0237 − 233	0.10	207	C	a	0.16a	0.12a	a	a	a	a	a	a						
1.9024	0229 + 131	0.06	207	A	b	0.76b	0.40b	B0.17a	0.10a		b	b	b						
1.9106	0122 − 380	0.09	154	A	0.21d	0.38d	0.34d	0.21d	d	d	d	d	d						
1.9122	1037 − 270	0.09	205	A	0.45a	0.31a	0.33a	0.21a	0.89b	†0.25c	c	c	c						
1.9127	0122 − 380	0.09	154	B	d	0.48d	0.34d	d	d	d	d	d	d						
1.9131	0736 − 063	-0.00	152	B	h	0.73g	0.50g	h	h		h	h	h						
1.9140	1037 − 270	0.09	205	A	b	b	b	b	b	†0.36c	b	1.02b	0.70b						
1.915	2154 − 205	0.03	184	B	n	B S0n	B S0n	n	n	n	n	n	n				n	n	n
1.9159	0848 + 163	0.00	207	B	a	0.55b	0.15a	a	a	a	a		a						
1.9175	0848 + 163	0.00	207	A	a	0.55b	B0.34a	a	a	a	a		a						
1.9199	1157 + 014	0.02	152	C	k	B4.01k	B4.01k	k	k	k	k		k						
1.9199	2044 − 168	0.01	199	B	d	B1.09c	B0.91c	0.20d	d		d		d						

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
1.9206	2206 − 199	0.20	207	A	†1.03d	1.12c	1.15d	†0.79d	†1.11d		0.96c	1.10c	0.83b						
1.9210	2206 − 199	0.20	185	B													1.54f	1.16f	
1.9213	2044 − 168	0.01	199	B	c	B1.09c	B0.91c	c	c		c		c						
1.9236	1435 + 638	0.05	207	A	0.34b	0.46b	0.39b	b	b		b	b	b						
1.9287	0150 − 202	0.07	207	B	a	0.09a	0.08a	a	a		a	a	a						
1.9307	1523 + 214	-0.00	199	B	b	0.13b	0.09c	b	b		b								
1.9310	0736 − 063	-0.01	152	A	h	0.95h	0.89g	0.32f	h	h	h	h	h						
1.9342	0151 + 048	-0.01	207	A	a	0.35b	0.27a	0.12a	a		0.12a		a						
1.935	0151 + 048	-0.01	130	AD	S4d	S4d	S4d	d	d	d	d								
1.9368	1222 + 228	0.03	152	B	f	1.10f	0.80f	f	f	f	f	f	f						
1.9372	1222 + 228	0.03	207	A	0.12a	1.18c	0.92b	0.26b	0.19b		b	b	b						
1.9391	2212 − 299	0.23	206	B										0.62h	0.54f	g	g	g	g
1.9400	0852 + 197	0.09	207	B	c	0.31b	0.41c	c	c		c	c	c						
1.9405	0142 − 100	0.23	207	A	†0.31a	0.41a	0.31a	†0.56a	†0.29a		†0.85a	a	a						
1.9410	1329 + 412	-0.00		B	b	0.44b	0.36a	b	b		b	b	b						
1.9416	0142 − 100	0.23	207	B	a	0.21a	0.12a	a	a		†0.47a	0.26a	a						
1.9436	1157 + 014	0.01	152	A	1.24h	0.29g	h	0.68h	h	h	1.06j		0.67h						
1.9441	1157 + 014	0.01	211	A										1.38f	1.35f	0.59d		1.45e	1.23e
1.9443	0142 − 100	0.23	207	B	a	0.19a	0.14a	a	a		a	a	a						
1.9443	1157 + 014	0.01	112	B	f	f	f	f	f	f	f	0.48f	f				S0f		
1.9458	0802 + 103	0.00	65	A	B1.90d	B4.07d	B4.07d	1.56d	1.26d	d	0.48d		d						
1.9499	0802 + 103	0.00	65	A	S0d	B4.07d	B4.07d	S0d	S0d	d	d		d						
1.950	1116 + 128	0.06	9	B	m	B S0m	B S0m	m	m	m	m	m	m						
1.9517	2225 − 055	0.01	26	C	j	j	j	S0j	S0j	j	j	j	j						
1.9550	1038 − 272	0.12	205	B	†0.89b	0.52b	B0.57b	B0.28a	0.21a	†0.80c	0.16a	c	c						
1.9551	1038 − 272	0.12	202	AD	†0.17a	a	a	0.24a	0.17a		a	a	a						
1.9560	0237 − 233	0.09	15	C	b	S1b	S3b	S4b	B S1b	b	b								
1.9581	0229 + 131	0.04	207	C	a	B0.17a	0.08a	0.16a	a		a	a	a						
1.9596	1247 + 267	0.03	207	B	a	0.13a	0.17a	0.07a	a	a	a								
1.9600	1038 − 272	0.12	205	A	b	B0.57b	B0.16a	0.15a	b	b	b	b	b						
1.9615	0551 − 366	0.13	152	A	†3.00g	2.13j	1.53j	1.42f	1.02f	†2.25j	2.04j	2.32k	1.72k						
1.9617	1559 + 173	-0.01	199	A	f	1.71e	1.54e	0.68h	0.27f		f								
1.9625	0551 − 366	0.13	185	B													3.68j		
1.9634	1213 + 093	0.22	207	B		0.64a	0.37a				a	a	a						
1.9643	0122 − 380	0.07	154	C	d	0.10d	B0.37d	d	d	†0.40d	d	d	d						

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586
1.9644	0119 − 046	-0.01	158	A	0.07a	B1.69a	B1.52a	0.61a	0.57a	0.44j	a		a					
1.9666	0013 − 004	0.04	207	A	0.38c	0.70d	0.77c	0.34c	0.27c		0.73d		0.20c					
1.9678	1157 + 014	0.01	152	C	i	i	i	2.91i	2.76i	i	i		i					
1.9681	0348 + 061	0.03	207	A	0.28c	0.49c	0.33c	c	c		c	c	c					
1.9697	0013 − 004	0.04	207	A	B2.39d	0.83c	B1.73e	B1.21e	0.60c		1.14e		0.62d					
1.9699	0122 − 380	0.07	154	B	d	0.37d	B1.21d	d	d	d	d	d	d					
1.9722	1037 − 270	0.07	205	A	0.32b	0.64b	0.38a	0.31a	0.11a	b	b	b	1.15b					
1.9724	0119 − 046	-0.01	158	A	a	0.81a	0.84a	0.10a	0.10a	a	a		a					
1.9726	1037 − 270	0.07	195	AD	r	0.94k	0.94k	r	r	†1.35n	r	r	r					
1.9729	1623 + 2689	0.17	207	B	a	0.14a	0.07a	†0.70b	†0.18b	a	a	a	a					
1.9739	0122 − 380	0.07	154	A	0.30d	1.21d	0.98d	0.50d	0.34d	†0.74d	d	d	d					
1.9740	1157 + 014	0.00	152	A	l	B13.15l	B13.15l	0.84g	0.55f	l	l		l					
1.9750	0013 − 004	0.04	207	A	B0.55d	B1.73e	0.33d	0.37d	d		0.68c		d					
1.9751	0119 − 046	-0.01	158	A	a	0.34a	0.37j	a	a	0.13a	a		a					
1.9795	0122 − 380	0.07	154	C	d	0.97d	0.07d	d	d	d	d	d	d					
1.9795	1157 + 014	0.00	152	A	g	B13.12l	B13.12l	0.76g	0.69h	g	g		g					
1.9805	1222 + 228	0.02	207	B	b	0.17a	0.09b	b	b		b		b					
1.9856	1623 + 2686	0.19	210	C	c	0.54c	0.56c	c	c		c	c	c					
1.9862	1148 − 001	-0.00	207	B	b	0.27b	0.18a	b	b		b		b					
1.987	0747 + 613	0.16	133	B	†S0n	B S0n	B S0n	B†S0n	n	n	n	S0n	n				n	
1.9886	0002 − 422	0.23	121	A	a	0.74a	0.64a	a	a		†0.17a	a	a					
1.9909	0013 − 004	0.03	207	B	d	B0.24d	0.18c	d	d		d		d					
1.9961	2116 − 358	0.11	206	A										1.94j	1.12j	g	1.12f	0.69h
1.9965	1159 + 123	0.39	207	C		b	b				b	b	†0.19b				b	
1.9975	1159 + 123	0.39	207	C		d	d				d	†1.26d	d				0.49a	
1.9990	0029 + 002	0.07	26	A	f	0.53f	0.40f	0.47f	0.33f	f	f	f	f					
1.9993	0421 + 019	0.02	157	A	a	0.19a	0.18a	a	a	a	a		a					
1.9994	0913 + 072	0.23	207	B	†0.66b	0.19a	0.15a	†0.29a	†0.08a		a	a	a					
2.0083	0150 − 202	0.05	207	B	a	0.14a	0.08a	a	a		a	a	a					
2.0088	0029 + 002	0.07	26	A	c	0.60c	0.43c	0.30f	c	c	c	c	c					
2.0099	0150 − 202	0.05	207	A	a	0.11a	0.09a	0.08a	a		a	a	a					
2.0113	1337 + 113	0.26	212	B		†0.65c	B†0.35c				c	c	c					
2.0140	2206 − 199	0.16	207	B	b	0.25c	0.14b	†0.39b	b	b	b	b	b					
2.0144	1038 − 272	0.10	205	C	b	0.85a	0.89b	b	b	†0.16b	b	b	b					
2.016	0642 + 449	0.36	58	C	f	B†S3f	f	†S3f	B†S3f	f	f	f	f					

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586
2.0164	1337 + 113	0.26	212	B		B†0.35c	†0.23b				c	c	c					
2.0200	0118 − 031B	0.03	194	A	0.96e	1.39j	1.16j	0.73j	i	†0.86i	0.60j	0.70j	0.23f					
2.020	1228 + 077	0.12	164	A	†0.40c	0.33c	0.20c	0.33c	c		c	c	0.73c					
2.0218	0820 + 296	0.11	67	C	†S0a	a	a	a	a	†S0a	a		a					
2.0231	2126 − 158	0.33	206	B										0.67i	0.38e	e	0.22c	e
2.0237	0348 + 061	0.01	207	A	c	0.82b	0.71c	0.37b	0.36b		c	c	c					
2.0257	0029 + 002	0.06	26	A	0.17f	0.66f	0.43f	0.23f	f	f	f	f	f					
2.0263	1037 − 270	0.05	195	AD	r	B1.32n	B1.32n	r	r	†1.82o	r	r	r					
2.0282	0013 − 004	0.02	207	A	0.45c	0.63c	0.56c	0.44c	0.33c		c		c					
2.0289	1037 − 270	0.05	205	A	0.13a	0.67a	0.51a	0.44a	0.39a	c	c	c	c					
2.0322	0307 − 195B	0.03	170	A	0.73f	0.69i	0.33f	i	i	†1.32f	i		i					
2.0330	0348 + 061	0.01	207	A	c	0.57c	0.38b	0.27b	c		c		c					
2.0330	2000 − 330	0.43	214	C								c					0.44b	c
2.0343	0424 − 131	0.04	207	C	0.62a	a	a	0.13a	a	†0.57a	0.30a	0.40b	a					
2.0353	0307 − 195A	0.03	170	B	f	0.43f	f	0.26f	f	†0.82i	f		f					
2.0422	0237 − 233	0.06	207	CD	a	0.07a	0.08a	a	a	a	a	a	a					
2.0433	0913 + 072	0.22	207	B	†0.39b	0.19a	0.06a	†0.88a	B†0.60a		a	a	a					
2.0435	0226 − 038	0.01	207	A	a	0.28a	0.20a	0.16a	0.18a		a		a					
2.0435	1309 − 056	0.06	152	A	l	B3.22l	B3.22l	0.99g	0.69g	l	l	l	l					
2.0500	1623 + 2689	0.15	207	A	a	0.29a	0.22a	†0.09a	†0.22a	†0.10a	a	a	a					
2.0526	1623 + 2689	0.14	207	A	†0.67b	b	b	†0.28a	†0.39a	†0.56a	b	b	b					
2.05337	1623 + 2689	0.14	210	AD	†0.58c	1.26c	0.95c	†0.30c	†0.63c	†0.58c	c	c	c					
2.0555	1222 + 228	-0.01	207	B	b	0.25b	0.21b	b	b		b		b					
2.0633	0913 + 072	0.21	207	A	a	0.21a	0.22a	B†0.60a	†0.21a		a		a					
2.0652	1038 − 272	0.08	205	C	a	a	a	0.20a	B0.36a	†0.49b	a	0.15a	a					
2.0668	0450 − 132	0.06	207	A	0.89b	1.07b	0.82b	0.67b	0.54b		b	b	B0.22a					
2.070	1413 + 117	0.14	178	A	k	S0k	S0k	†S0k	†S0k	k	k	k	k					
2.0708	1037 − 270	0.03	205	A	c	0.65b	0.73b	0.24a	0.14a	†0.26b	0.66a	c	0.10a					
2.0716	1037 − 270	0.03	202	A	d	0.91c	B1.14c	B0.39b	0.16b	d	d	d	d					
2.0718	0100 + 130	0.18	35	C	B†S2k			†S1k	B†S2k	†S1k								
2.0720	1037 − 270	0.03	195	BD	l	B5.70x	B5.70x	l	l	l	l	l	l					
2.0755	1037 − 270	0.03	205	C	b	0.73b	b	0.23a	b	†0.41b	0.50a	b	0.52b					
2.0768	1038 − 272	0.08	205	A	b	B6.29g	B6.29g	0.14a	b	B†0.20b	b	b	b					
2.0825	1037 − 270	0.03	205	A	0.38a	1.52b	1.11b	0.87a	0.71a	†1.19d	b	b	b					
2.0826	1037 − 270	0.03	195	AD	r	B5.68x	B5.68x	1.95r	1.95r	†1.10l	r	r	r					

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.0830	1037 − 270	0.03	202	CD	0.23b	f	f	f	f	†0.65f	f	f	f						
2.0844	0831 + 128	0.19	207	B		0.93b	0.86c					0.14a	b						
2.0851	1038 − 272	0.08	205	C	B0.27a	c	c	B0.35a	c	B†0.18b	c	c	c						
2.0855	1510 + 115	0.01	207	B	b	b	b	1.20c	0.27b	b	b	b	b						
2.0856	1624 + 2685	0.03	210	C	c	c	c	c	c	B†0.72c	c		c						
2.088	1550 − 269	0.02	184	B	n	B S0n	B S0n	n	n	n	n	n	n				n	n	
2.0893	1510 + 115	0.01	207	A	c	B7.00g	B7.00g	1.20c	0.90b	c	c	c	c						
2.0919	0307 − 195A	0.02	170	C	f	f	f	f	f	†0.52f	f								
2.0935	1213 + 093	0.18	207	B		0.18a	0.19a	a	a		a	a	a						
2.094	1623 + 2686	0.15	159	AD	†0.55a	B1.75a	B1.75a	k	k	k	k	k	k						
2.095	2359 − 022	0.21	201	B	n	B S0n	B S0n	B†S0n	B†S0n	n	n	n	n						
2.0960	1623 + 2686	0.15	210	A	c	0.54c	0.42c	†1.50c	†0.28c	†0.79c	c	c	c						
2.1010	1510 + 115	0.00	207	A	a	0.99b	0.29b	a	a	a	a	a	a						
2.103	0019 + 011	0.01	131	B	j	S0j	S0j	j	j	j	j	j	j						
2.1030	0148 − 097	0.21	209	B		0.27d	0.17d					a	a						
2.1063	0450 − 132	0.05	207	A	0.20b	0.82b	0.75c	0.45b	0 21a		b	b	b						
2.1078	0100 + 130	0.17	35	C	k			†S3k	B†S3k	k									
2.1109	1225 + 317	0.03	102	C	e	e	e	B0.87e	e	†S1e	e	e	e				e	e	e
2.1143	2343 + 125	0.12	207	B		0.24a	0.18a					a	a						
2.1203	1225 + 317	0.03	102	B	e	0.26e	0.22e	e	e	e	e	e	e				e	e	e
2.1219	0307 − 195B	-0.00	170	A	i	0.64i	0.45i	i	i	†0.74c	i								
2.1228	0307 − 195A	0.01	170	A	c	c	c	c	c	†0.86i	c								
2.1247	0830 + 115	0.24	104	C	†0.10b	0.10b	0.10b	†0.19b	†0.38b	b	b		b						
2.126	0128 − 367	0.01	183	C	a	B24.64a	B24.64a	a	a	a	a	a	a						
2.126	1101 − 264	0.01	154	C	d	0.10d	0.13d	d	d	d	d		d						
2.1285	1037 − 270	0.02	205	A	0.15a	0.63b	B1.09b	0.40a	0.26b	†1.62c	d	0.19c	d						
2.1287	1037 − 270	0.02	202	A	0.22b	0.86b	B1.25b	0.38b	0.26b	B†1.92f	b	b	b						
2.1326	1309 − 056	0.03	152	B	g	0.49g	0.45i	g	g	g	g		g						
2.1330	0316 − 203	0.21	209	B		B3.37e	B3.37e					0.68b	0.49c						
2.1330	0424 − 131	0.01	207	B	a	B1.32b	0.24a	a	a	a	a		a						
2.1345	1037 − 270	0.01	205	B	b	1.09b	1.48b	b	b	b	b	b	b						
2.1361	1037 − 270	0.01	202	C	b	B1.24b	B1.63b	0.26b	b	b	b	b	b						
2.1363	1037 − 270	0.01	205	C	d	d	d	0.21a	d	d	d	d	0.18b						
2.138	1228 + 077	0.08	164	B	c	c	c	0.29c	0.16c	c	c		c						
2.1390	1037 − 270	0.01	205	A	0.61a	B1.47b	B0.94b	0.75a	0.62a	†1.24c	0.42b	0.58c	0.46b						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586
2.2123	1246 − 057	0.00	93	A	c	0.37c	0.22c	0.22c	0.12c	†1.00c	c	c	c					
2.2142	0440 − 168	0.13	207	B		0.30a	0.17a				a	a	a					
2.2168	0830 + 115	0.21	104	C	b	0.75b	0.53b	b	b	b	b							
2.2256	0100 + 130	0.13	35	C	B†S3k			B S1k		B†S2k								
2.2288	0440 − 168	0.13	207	A		0.31a	0.15a				a	a	B0.30b					
2.2315	0450 − 132	0.01	207	A	a	1.14b	0.96b	0.21a	0.12a		B0.21a		a					
2.2345	1213 + 093	0.14	207	A	†0.12a	0.88c	0.63b	†0.85b	0.47b		0.29b	0.35d	b					
2.2380	2341 − 235	0.16	209	B		B1.37e	B1.37e				d	0.97d	0.52c					
2.2405	1623 + 2686	0.11	159	AD	k	B2.78k	B2.78k	B0.88k	B0.88k	k	k	k	k					
2.2413	0153 + 045	0.20	209	B		0.28b	0.11b				c	c	c					
2.2413	1623 + 2686	0.11	210	A	†0.18c	1.45c	1.03c	c	c	c	c	c	c					
2.247	1232 + 134	0.04	177	A	S0n	B S0n	B S0n	n	S0n	n	B S0n	S0n	n	B S0n	B S0n			
2.2475	1548 + 092	0.14	207	C	a	0.23b	0.08a	†0.76a	†0.21a		a	a	a					
2.2659	0041 − 266	0.21	214	B		0.16b	0.13b					0.11a	b				b	b
2.2687	0123 + 257	0.03	63	C	d	d	d	d	d	B†S4d	d	d	d					
2.2754	2344 + 125	0.14	207	C		0.14a	0.07a				a	a	a					
2.2760	0453 − 423	0.11	86	AD	†0.34e	0.58e	0.43e	0.18e	e	e	e	e	e					
2.2760	1623 + 2685	0.06	210	C	c	0.27c	0.28c	c	c	†0.15c	c	c	c					
2.2765	0453 − 423	0.11	121	A	a	0.67a	B0.55a	0.34a	0.24a	†0.49a	a		a					
2.2770	0731 + 653	0.21	209	B		0.25b	0.17b				0.11a	c	c					
2.2791	0100 + 130	0.12	152	B		0.38c	0.25b				c	c	c					
2.2800	0846 + 156	0.17	209	B		0.76b	0.72c				c	c	c					
2.2821	0216 + 080	0.20	207	B		0.18a	0.09a				a	a	a					
2.2930	0123 + 257	0.02	63	C	d	d	d	d	d	B†S4d	d	d	d					
2.2930	0216 + 080	0.19	207	A		1.40b	0.81b				0.91b	1.08b	0.49b					
2.2953	0420 + 007	0.17	209	B		0.79c	0.39c				c	c	c					
2.2986	0100 + 130	0.11	152	B		0.28b	0.16b				b	b	b					
2.2995	0114 − 089	0.24	207	B		0.36a	0.29a				a	a	a					
2.3003	0123 + 257	0.02	63	C	d	d	d	d	d	B†S5d	d	d	d					
2.3018	0002 − 422	0.13	121	A	†1.03a	1.15a	B0.85a	0.91a	0.76a	†0.94a	0.48a		a					
2.3022	0002 − 422	0.13	206	B													0.45f	g
2.3085	0100 + 130	0.11	72	B													S0f	f
2.3093	0100 + 130	0.11	152	B		b	b				0.38c	0.40b	0.31b					
2.3094	0100 + 130	0.11	77	BD	†S0a	a	a	a	a	†S0a	S0a	S0a	S0a				a	a
2.3105	0100 + 130	0.11	35	BD	B†S2k	k	k	k	k	k	B S1k	S1k	k					

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.1399	1037 − 270	0.01	202	A	0.73b	B1.62b	B0.92b	0.67b	0.61a	b	b	0.61a	b						
2.1400	1337 + 113	0.22	212	B		1.06a	0.73a				a	a	a						
2.1404	1037 − 270	0.01	195	AD	0.96k	B4.24x	B4.24x	o	o	†1.43o	o	o	o						
2.1408	0528 − 250	0.18	207	A		0.59b	0.49b				0.56b	0.64b	0.32a						
2.144	0642 − 349	0.00	144	B	a	B S0a	B S0a	a	a	a	a	a	a						
2.1442	0352 − 275	0.19	209	B		0.26c	0.17b				c	c	c						
2.1452	0913 + 072	0.18	207	C	a	0.14a	0.22a	a	a		a		a						
2.1455	1038 − 272	0.06	205	A	c	0.44b	0.77c	c	c	B†0.85c	c	c	c						
2.1498	0112 + 030	0.19	207	C		0.12a	0.15a				a	a	a						
2.1506	1337 + 113	0.22	212	B		0.39b	0.29a				a	a	a						
2.153	2359 − 022	0.19	201	B	n	B S0n	B S0n	n	n	n	n	n	n						
2.1532	1309 − 056	0.02	152	B	f	0.49g	0.48f	0.22e	f	f	f		f						
2.1563	2251 + 244	0.05	67	B	n	S2n	S2n	n	n	n	n		n						
2.159	0642 − 349	0.00	144	B	a	B S0a	B S0a	a	a	a	a	a	a						
2.1615	1623 + 2689	0.11	207	B	a	0.18a	0.10a	a	a	a	a	a	a						
2.1635	1309 − 056	0.02	152	A	e	2.03g	1.46f	0.74g	0.76h	e	e		e						
2.1683	0002 − 422	0.17	121	A	a	0.35a	0.28a	a	a	a	a	a	a						
2.1693	2343 + 125	0.10	207	B		0.14a	0.14a				a	a	a						
2.1714	2343 + 125	0.10	207	B		0.32a	B0.19a				b	b	b						
2.1715	0852 + 197	0.02	207	A	b	0.66c	0.35c	0.16b	0.13b		b								
2.1730	0424 − 131	-0.00	207	B	a	0.12a	0.12a	a	a	a	a		a						
2.1777	0334 − 204	0.26	209	C		c	c				c	0.92b	c						
2.1777	1624 + 2685	0.00	210	B	c	B0.34c	B0.34c	c	c	†0.24c	c								
2.1803	0824 + 110	0.03	104	B	f	B0.44f	0.38f	0.25f	0.28f	B†0.47f	f								
2.1844	2342 + 089	0.17	207	B		0.12a	0.09a				a	a	a						
2.1981	1226 + 105	0.03	104	C	n	B S0n	B S0n	n	n	n	n								
2.2002	0352 − 275	0.17	209	C		0.38b	0.23b				c	c	c						
2.2007	2348 − 011	0.22	212	C	f	0.35d	0.70f	f	f		f	f	f						
2.2025	0237 − 233	0.01	152	CD	e	0.26g	e	e	e	e	e								
2.2028	0237 − 233	0.01	207	A	a	0.48a	0.19a	0.50a	a	†0.70a	a	a	a						
2.2052	0453 − 423	0.13	86	C	B†0.47e	B0.16e	e	0.25e	e	e	e	e	e						
2.2056	0528 − 250	0.16	207	B		1.14b	0.94a				b	b	b						
2.2062	0100 + 130	0.14	35	B	†S0k			†S1k	B S1k	k									
2.2081	0528 − 250	0.16	207	B		1.13b	0.82a				b	b	b						
2.211	0747 + 613	0.08	133	B	S0n	B S0n	B S0n	S0n	S0n	n	n	n	n						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.3123	0449 − 135	0.21	207	B		0.46a	0.25a				a	a	a						
2.3147	1038 − 272	0.00	202	C	b	b	b	b	b	B†0.30b	b	b	b						
2.3187	1548 + 092	0.12	207	A	b	0.20b	0.13b	0.13a	b		0.12a		b						
2.3246	0142 − 100	0.11	207	B	a	0.08a	0.05a	a	a	a	a	a	a						
2.3260	0201 + 365	0.16	209	B		B1.67e	B1.67e				0.32b	0.53c	d						
2.334	0933 + 733	0.06	133	A	n	B S0n	B S0n	S0n	S0n	n	n	n	n						
2.3361	0216 + 080	0.18	207	B		0.09a	0.09a				0.34a	a	a						
2.3368	2048 + 312	0.22	209	B		0.22d	0.20e				b	b	b						
2.3392	0041 − 266	0.19	214	B		0.23b	0.16b				b	b	b				b		
2.3426	0123 + 257	0.00	63	C	d	S2d	d	d	d	d	d	d	d						
2.3466	2342 + 089	0.12	207	A		0.33a	0.26a				0.09a	a	a						
2.3476	0123 + 257	0.00	63	C	d	d	d	d	B S2d	†S3d	d	d	d						
2.3483	2342 + 089	0.12	207	B		0.38a	0.30b				b	b	b						
2.3561	0142 − 100	0.11	207	A	†0.38a	0.83a	0.51a	0.42a	0.18a	†0.31a	a	a	a						
2.3627	0731 + 653	0.18	213	C		0.51i	0.76h					0.22j	h						
2.3633	2251 + 244	-0.01	67	A	m	S1m		S2m	m	m	m								
2.3639	0438 − 136	0.23	214	C		0.37b	0.54b				b	b	b				b		
2.364	2251 + 244	-0.01	55	BD	k	B S0k	B S0k	k	k	k	k	k	k						
2.3641	0045 − 036	0.20	209	B		0.70b	0.48b				b	b	b						
2.3663	0438 − 136	0.23	214	B		0.54b	0.31b				b	b	b				b		
2.3689	0123 + 257	-0.00	63	A	d	S5d	S5d	B S2d	S2d	B†S5d	d	d	d						
2.3701	0123 + 257	-0.00	67	B	a			a	a	†S5a									
2.3767	2239 − 386	0.28	214	B		b	b				b	1.06e	†0.68e				b		
2.3820	2359 + 003	0.14	209	C		0.42d	0.15c				e	e	e						
2.3852	0347 − 383	0.22	214	B		0.41b	0.27a				b	b	b				b		
2.3880	0132 − 198	0.20	209	A		0.62b	0.25a				0.19b	b	b						
2.3938	2126 − 158	0.23	118	AD	a	0.59a	B0.38a	†0.21a	a		†0.38a	a	a						
2.3939	2126 − 158	0.23	207	B		B0.88a	0.28a		a		†0.29a	a	a						
2.3942	2126 − 158	0.23	213	BD		0.30a	0.27a					a	a						
2.3960	0453 − 423	0.08	86	BD	e	0.24e	0.21e	e	e	e	e	e	e						
2.3967	0453 − 423	0.07	121	B	a	B0.26a	B0.26a	a	a	a	a								
2.3985	0000 − 398	0.12	111	C	i	0.47i	0.56i	i	i		i	i	i						
2.4002	0153 + 045	0.16	213	A		0.75e	0.75d					d	0.16b						
2.4007	0153 + 045	0.16	209	BD		1.16c	B0.59b				b	b	b						
2.4019	1623 + 2689	0.04	210	C	b	0.16b	B0.81b	b	b	b	b		b						

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
2.4074	0153 + 045	0.16	209	B		B0.59b	0.52b				b	b	b						
2.4156	0837 + 109	0.23	207	B		0.18a	0.10a				a	a	a						
2.4224	0112 + 030	0.11	207	A		0.28b	0.13a	0.23b	b		0.77b	0.60b	0.45e						
2.4238	2038 − 012	0.10	209	B		0.66c	0.45c		b		b	b	b						
2.4241	0201 + 365	0.13	209	B		0.77c	0.53b		c		c	0.33c	c						
2.4243	0153 + 045	0.15	213	B		0.51d	0.48e				d	d	d						
2.4262	2348 − 011	0.16	213	AD		1.47j	1.16j				0.82i	1.44j	0.52g						
2.4265	2344 + 125	0.09	207	A		B0.53b	0.29b	0.23b	0.18b		b	b	b						
2.4282	2348 − 011	0.16	212	A	j	0.70j	j	†2.32j	j	†1.20g	0.55j	j	j						
2.4285	2343 + 125	0.03	207	A		0.48a	0.30a	a	a		0.30a	a	0.09a						
2.4292	0301 − 005	0.21	209	B		0.35b	0.26a		b		b	b	0.19b						
2.4293	2344 + 125	0.09	207	B		0.19b	0.09a	a	a		a	a	a						
2.4307	2343 + 125	0.03	207	A		0.63a	0.36a	a	a		a	B0.63b	0.27a						
2.4346	0324 − 407	0.16	111	B	i	0.38i	B0.38h	i	i		i	i	i						
2.4370	2344 + 125	0.09	207	C		B0.41b	0.09a	b	b		b	b	b						
2.4376	0029 + 073	0.21	209	B		0.31a	0.13a		b		b	b	b						
2.4381	0324 − 407	0.16	111	B	i	B0.38i	0.29i	i	i		i	i	i						
2.4442	2342 + 089	0.09	207	B		0.31a	0.25a	a	a		a	a	B0.67c						
2.448	0642 + 449	0.24	58	B	f	B†S5f	B†S5f	†S5f	f	f	f								
2.4496	0830 + 115	0.14	209	C		0.44c	0.17c	c	c		c	c	c						
2.4540	0329 − 255	0.07	207	A		0.32a	0.14a	0.23a	0.11a		a	a	a						
2.4561	2048 + 312	0.19	209	B		0.58d	0.34b	b	b		b	B0.56g	b						
2.4597	2126 − 158	0.21	207	B		0.08a	0.06a	†1.16b	†0.54b		a	a	a						
2.4600	0201 + 365	0.12	209	B		B3.19f	B3.19f	e	e		B1.78d	B2.14d	1.16c						
2.4641	0002 − 422	0.08	121	A	a	0.72a	B0.55a	0.35a	0.23a	a	a								
2.465	1313 + 200	0.00	107	B	k	B S0k	B S0k	k	k	k	k	k	k						
2.4672	0836 + 113	0.06	212	A	1.19f	g	g	g	g	†0.88g	0.13h	g	0.81k				0.96i		
2.4685	0400 − 271	0.10	209	B		B0.40c	0.20c	b	b		b	b	b						
2.469	0836 + 113	0.06	201	B	m	B S0m	B S0m	m	m	m	m								
2.4691	0239 − 154	0.09	209	B		0.39b	0.17b	0.18f	b		b	b	b						
2.4700	0301 − 005	0.19	209	B		0.13b	0.15b	b	b		b	b	b						
2.4720	1347 + 112	0.06	212	A	h	1.79k	0.67j	1.06i	0.50i	†1.79h	1.11j	1.22l	1.80k						
2.4758	0042 − 264	0.21	214	B		0.24b	0.16a				b	b	b				b		
2.47637	0805 + 046	0.11	148	A	†0.60f	1.12f	1.09f	0.35f	0.29f	†0.58f	f	f	f						
2.4787	0207 − 398	0.09	111	A	0.29i	1.38i	1.15i	0.46i	0.40i		i	i	i						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.4810	0045 − 036	0.17	209	B		0.19b	0.09b	b	b		b	b	b						
2.4906	1548 + 092	0.07	207	B	d	0.30d	0.27d	d	d		d								
2.4915	2233 + 131	0.20	209	B		0.89c	0.60c	b	b		b	b	b						
2.492	0642 + 449	0.23	58	C	f	f	f	B†S5f	†S3f	f	f								
2.4932	0014 + 813	0.22	207	B		0.13a	0.09a	a	†0.34b		a	a	a						
2.507	0933 + 733	0.01	133	A	S0m	B S0m	B S0m	m	m	m	m	S0m	m						
2.5084	1337 + 113	0.11	212	B	a	a	a	0.33a	0.31a		a	a	a						
2.5167	0000 − 398	0.09	111	A	i	1.14i	0.28i	i	i		i	0.54i	i						
2.5180	0004 + 171	0.10	209	A		0.77c	0.54b	0.51c	0.30b		b	b	b						
2.5222	0207 − 003	0.09	207	A		B0.58a	0.48a	0.44a	a		0.56a	a	0.09a						
2.5229	1213 + 093	0.05	207	A	c	0.47e	0.31d	0.25a	c		0.49d								
2.5245	0316 − 203	0.09	209	C		B0.33b	0.23b	b	b		b	b	b						
2.5287	1623 + 2689	0.00	207	B	a	0.14a	0.08a	a	a	a	a								
2.5309	0153 + 045	0.12	213	B		0.29c	0.23c				c	c	c						
2.5321	0153 + 045	0.12	209	BD		0.29a	0.18a	b	b		b	b	b						
2.5382	0528 − 250	0.06	207	B		0.25a	0.19b	0.24b	b		b	B1.09f	b						
2.5390	0114 − 089	0.17	213	A		0.23b	0.13b				0.09c	b	b						
2.5394	0114 − 089	0.17	207	BD		0.17a	0.14a	a	a		a	a	a						
2.5401	1017 + 109	0.16	209	B		0.32c	0.18b	b	b		b	b	b						
2.5496	0438 − 136	0.18	214	B		0.29c	0.19b				b	b	b						
2.5511	0100 + 130	0.04	35	C	k	k	k	k	k	B†S0k	k	k	k						
2.5543	0201 + 365	0.10	209	B		0.62c	0.25c	d	d		d	d	d						
2.5564	0148 − 097	0.08	209	B		0.10a	0.10a	a	a		a	a	a						
2.5588	0130 − 403	0.12	111	B	†1.12i	0.90i	0.51i	i	i		i	i	i						
2.5596	1511 + 091	0.09	207	C	a	0.11a	0.06a	0.10a	a	a	a	a	a						
2.565	1442 + 101	0.24	48	B	k	†S0k	S0k	k	k	k	k	k	k						
2.5696	2343 + 125	-0.01	207	B	b	0.30a	0.24b	b	b		b	b	b						
2.5706	0347 − 383	0.17	214	B		0.18a	0.13a		a		a	a	a						
2.5734	0207 − 003	0.07	207	A	a	0.22b	0.17b	0.12a	0.07a		B0.57a	a	a						
2.5792	0352 − 275	0.06	209	B		0.42b	0.16b	b	b		b	b	b						
2.5883	2342 + 089	0.05	207	A	0.18a	0.58c	0.41c	0.31a	0.20a		b	b	b						
2.5900	0302 − 003	0.18	213	C		0.16b	0.22c				0.09a	c	c						
2.5906	0207 − 003	0.07	207	B	b	0.20b	0.11b	b	b		b	b	b						
2.6006	2239 − 386	0.22	214	B		0.38b	0.19a	b	b		b	b	b						
2.6172	2348 − 011	0.10	212	A	†1.21g	g	g	g	g	g	g								

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.6194	0100 + 130	0.02	77	C	a	a	a	S0a	S0a	a	a	a	a				a		
2.6217	1347 + 112	0.02	212	A	0.76g	0.86j	0.83j	0.78j	0.69j	†1.22e	g		g						
2.6241	2342 + 089	0.04	207	B	c	0.18b	B0.35c	c	c		c		c						
2.6271	2342 + 089	0.04	207	A	0.58a	0.67c	0.41b	0.52a	0.37a		B0.64c		0.17b						
2.6280	2204 − 408	0.14	214	B		0.26b	0.21b	b	b		b	b	b						
2.6299	2342 + 089	0.04	207	B	c	0.35c	0.17c	c	c		c		c						
2.6320	0148 − 097	0.06	209	B	a	0.42b	0.17a	a	a		a	a	a						
2.6336	1442 + 101	0.22	207	B		0.20a	0.13a					a	a						
2.6350	2344 + 125	0.03	207	B	b	0.14b	0.15b	b	b		b		b						
2.6379	2126 − 158	0.16	203	BD								0.12a	a						
2.6381	2126 − 158	0.16	118	AD	†0.52a	1.48a	0.88a	†0.82a	†0.49a	†0.74a	0.74a	0.49a	a						
2.6382	2126 − 158	0.16	213	AD		1.07e	0.78d				0.38a	0.44b	0.20c						
2.6383	2126 − 158	0.16	207	A	†0.63c	1.01d	0.67c	†0.61c	†0.63c		0.34b	0.31c	0.13a						
2.6385	2126 − 158	0.16	206	CD													0.82j		
2.6410	0249 − 184	0.14	209	B	b	0.79c	0.37b	b	b		0.63c	b	b						
2.6419	0045 − 036	0.13	209	C	b	0.21b	0.16b	0.19b	b		b	b	b						
2.6447	2351 − 154	0.01	104	B	b	0.27b	B0.27b	b	b	†0.03b	b		b						
2.6512	0138 − 381	0.06	111	A	i	0.44i	0.25i	0.27i	i		i	i	i						
2.6512	0347 − 383	0.14	214	A		0.58b	0.24a	†0.16a	†0.39a		a	a	a						
2.6526	0420 + 007	0.07	209	C	b	0.57c	0.27c	b	b		b	b	b						
2.6565	2038 − 012	0.03	209	B	b	0.30c	0.11b	b	b		b	b	b						
2.6631	0100 + 130	0.01	35	C	k	k	k	k	k	B†S0k	k	k	k						
2.6631	0100 + 130	0.01	77	CD	a	a	a	S0a	a	a	a	a	a				a		
2.6702	1511 + 091	0.06	207	A	a	0.28a	0.18a	a	a	†0.14b	a	a	a						
2.6705	1442 + 101	0.21	207	C		0.20a	0.15a				a	a	a						
2.6735	0249 − 222	0.13	209	B	b	0.44b	0.21a	b	b		b	0.25b	b						
2.6736	0528 − 250	0.03	207	B	a	0.13b	0.08a	0.12a	a		a		a						
2.6775	2351 − 154	-0.00	104	A	b	0.27b	0.27b	0.27b	0.11b	B†0.30b	b		b						
2.6791	2126 − 158	0.15	207	B	b	0.19b	0.15a	b	b		b	b	b						
2.6894	0302 − 003	0.15	213	C		0.23d	0.30d				0.06d		d						
2.6939	1442 + 101	0.20	207	C		0.16a	B0.21b				b	b	b						
2.6964	2344 + 125	0.02	207	C	b	B0.43b	B0.23c	b	b		b		b						
2.7016	2344 + 125	0.02	207	B	b	B0.23c	B0.57b	0.09a	b		b		b						
2.7205	0216 + 080	0.07	207	B	b	0.18b	0.15b	b	b		b		b						
2.7206	0001 + 087	0.13	209	C	b	0.63b	0.33a	b	b		b	b	b						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
2.7241	0301 − 005	0.13	209	A	b	1.31b	1.17b	0.96b	0.45b		b	b	b						
2.7280	2126 − 158	0.13	203	B		0.03a	0.02a						a						
2.7312	2359 + 068	0.13	209	B	b	0.25b	0.15b	b	b		b	b	b						
2.7413	0041 − 266	0.08	214	B		0.26a	0.14a	a	a		0.07a	a	a						
2.7431	1347 + 112	-0.01	212	B	k	0.76j	B1.14k	k	k	k	k								
2.7478	2359 + 068	0.12	209	B	b	0.40b	0.45b	b	b		b	b	b						
2.7576	0041 − 266	0.07	214	B	a	0.15a	0.09a	a	a		a	a	a						
2.7664	0830 + 115	0.05	104	C	b					†0.29b									
2.7683	2126 − 158	0.12	203	AD		0.25a	0.17a				0.14a		B0.07a						
2.7685	2126 − 158	0.12	118	AD	†0.80a	0.85a	0.58a	0.45a	0.21a	†1.01a	0.61a	0.53a	a						
2.7686	2126 − 158	0.12	207	A	†0.73b	0.68b	0.51b	B0.79a	0.22a		0.50b	0.60c	b						
2.7691	2126 − 158	0.12	213	AD		1.05d	0.64d	0.50a	0.20a		0.50c	0.71k	0.15b						
2.7801	2359 + 068	0.11	209	B	b	0.30b	0.15b	b	b		b	b	b						
2.7814	2344 + 125	-0.01	207	B	c	0.26c	0.26c	0.11a	B0.48b		c								
2.7820	0400 − 271	0.01	209	B	b	1.57c	1.23c	0.93c	0.51b		b	b	b						
2.7968	1337 + 113	0.03	212	A	0.33b	d	d	d	d	d	0.27h	0.17e	0.17d						
2.7980	0014 + 813	0.14	207	C	a	0.11b	B0.13a	a	a		a								
2.7982	0029 + 073	0.11	209	C	b	0.20b	0.26b	b	b		b	b	b						
2.8001	0352 − 275	0.00	209	B	b	0.28b	0.16a	b	b		b	b	b						
2.8004	0014 + 813	0.14	207	A	a	0.61b	0.26a	†0.39b	0.27a		a	a	a						
2.8052	0528 − 250	-0.01	207	B	c	0.37d	B1.02d	c	c		c								
2.8056	0201 + 365	0.03	209	B	b	0.60b	0.24b	b	b		b	b	b						
2.8064	0324 − 407	0.06	111	B	h	B1.76h	B1.76h	h	h	h	h		h						
2.8086	0014 + 813	0.14	207	C	†0.25b	b	b	b	b		b	b	b						
2.8103	0347 − 383	0.10	214	B	a	0.20a	0.25a	0.29a	0.20a		a	a	a						
2.8112	0528 − 250	-0.01	204	AD		0.34a	0.25a				0.54a	0.55a	0.34a						
2.8116	0528 − 250	-0.01	207	A	1.22b	B1.02d	B0.75f	0.86b	0.62b		1.18d								
2.8145	0528 − 250	-0.01	207	B	1.31b	a	a	0.15a	0.15a		0.91c								
2.8151	0045 − 036	0.08	209	B	0.59b	b	b	0.46b	0.28c		0.29c	b	b						
2.8194	2126 − 158	0.11	203	B		0.03a	0.02a				a		a						
2.8225	0302 + 171	0.02	209	B	b	S0b	S0b	b	b		b	b	b						
2.8284	2233 + 131	0.11	209	B	b	0.25c	0.16b	b	b		b	b	b						
2.8328	0153 + 045	0.04	213	B		0.55c	0.45c	c	c		c		c						
2.8338	0153 + 045	0.04	209	BD	b	0.38b	0.38b	b	b		b	b	b						
2.8352	1511 + 091	0.01	207	B	a	0.14a	0.25a	a	a	a	a		a						

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
2.8375	2204 − 408	0.08	214	B	b	0.24b	0.15b	b	b		b	b	b						
2.8389	1511 + 091	0.01	207	A	a	0.68b	0.47a	a	B0.39a	†0.14a	a		a						
2.8438	0102 − 190	0.05	209	B	b	0.43b	0.29b	b	b		b	b	b						
2.8470	1511 + 091	0.01	207	A	a	0.48a	B0.44a	a	a	†0.61b	a		a						
2.8487	0347 − 383	0.09	214	B	a	0.21b	0.12a	a	a		a	0.07a	a						
2.8505	2204 − 408	0.08	214	B	b	0.11a	0.09a	0.13b	0.11a		b	b	b						
2.8530	1511 + 091	0.01	207	A	a	B0.44a	0.31a	0.16a	0.15a	†0.95b	a		a						
2.8540	0400 − 271	-0.01	209	B	b	1.38c	1.19c	b	b		b	b	b						
2.8570	1511 + 091	0.01	207	B	a	B0.44a	B0.89a	a	a	†0.22a	a		a						
2.8573	1208 + 101	0.22	214	B		0.46a	B0.48a	a	a		a	a	a						
2.8606	1208 + 101	0.22	214	B		B0.15a	0.37a	a	a		a	a	a						
2.8606	1511 + 091	0.01	207	A	a	0.55a	B0.39a	0.26a	0.29a	a	a		a						
2.8635	1511 + 091	0.00	207	A	a	B0.89a	1.02a	B0.39a	0.25a	a	a		a						
2.8640	1208 + 101	0.22	214	B		B0.48b	0.33a	a	a		a	a	a						
2.8641	2359 + 068	0.09	209	B	b	0.14b	0.16b	b	b		b	b	b						
2.8669	1511 + 091	0.00	207	A	0.13a	B0.39a	0.47b	a	a	a	a		a						
2.8705	0004 + 171	0.01	209	C	0.15b	b	b	b	b		0.16b	b	b						
2.8734	0029 + 073	0.09	209	B	b	0.13a	0.12b	b	b		b	b	b						
2.87797	0805 + 046	-0.00	148	A	e	0.39e	0.55e	e	e	e	e								
2.8853	1511 + 091	-0.00	207	A	a	0.72b	0.72b	B0.29a	0.15a	a	a		a						
2.8861	0731 + 653	0.04	209	B	b	0.13b	0.06b	b	b		b	b	b						
2.8894	2233 + 136	0.08	209	B	b	0.17b	0.21b	b	b		b	b	b						
2.8917	0334 − 204	0.06	209	B	b	0.15b	0.15b	0.34b	b		b	b	b						
2.9035	0316 − 203	-0.01	209	C	b	B0.32b	0.34b	b	b		b	b	b						
2.904	0029 + 073	0.09	209	B	b	0.76b	0.59b	0.13b	b		b	b	b						
2.9071	2126 − 158	0.09	203	BD		0.04a	B0.06a				a								
2.9073	2126 − 158	0.09	213	A	b	0.22c	0.15b	0.08a	b		0.05b	0.06c	b						
2.9091	0731 + 653	0.03	213	BD	i			1.30i	0.88i										
2.9099	0731 + 653	0.03	209	B	1.06b	1.44b	1.02b	1.50b	0.94b		b	0.45b	b						
2.912	0642 + 449	0.12	58	B	†S0e		S5e	e	e	†S3e									
2.9137	1208 + 101	0.20	214	B		0.22b	0.17b	b	b		b	b	b						
2.9149	2359 + 068	0.08	209	B	b	0.24b	0.25b	b	b		b	b	b						
2.9158	1208 + 101	0.20	214	B		0.55b	0.30b	b	b		b	b	b						
2.9277	0102 − 190	0.03	209	B	B0.60b	0.13b	0.12b	b	b		0.32b	0.43c	b						
2.9326	0324 − 407	0.03	111	B	0.25h	B0.64h	B0.64h	h	h	h	h								

z_{abs}	QSO	Beta	Ref	GD	CII	CIV	CIV	SiIV	SiIV	SiIII	SiII	AlII	FeII	MgII	MgII	MgI	FeII	FeII	FeII
					1335	1548	1551	1394	1403	1206	1527	1671	1608	2796	2803	2852	2382	2586	2599
2.9406	0301 − 005	0.07	209	B	a	0.44a	0.23a	0.45b	0.27a		a	0.08a	a						
2.9437	2359 + 068	0.07	209	C	b	0.13b	0.18b	b	b		b	b	b						
2.9494	0055 − 269	0.16	214	B	b	0.24b	0.14a	b	b		b	b	b						
2.9547	0837 + 109	0.09	207	C	a	0.14a	0.13a	a	a		a	a	a						
2.9647	0302 − 003	0.08	213	C	d	d	0.28d	d	d		d		d						
2.9724	0102 − 190	0.02	209	B	b	0.64b	0.53b	b	b		b	b	b						
2.9724	0642 + 449	0.10	209	B	b	0.21b	0.20b	0.21b	b		b	b	b						
2.9773	0537 − 286	0.03	105	A	S0n	B S0n	B S0n	n	n	n	n	n	n						
2.9780	2000 − 330	0.18	214	B	a	0.29a	0.21a	a	a		a	a	a						
2.980	1602 + 178	0.01	189	B	m	B S0m	B S0m	m	m	m	m	m	m						
2.9872	2359 + 068	0.06	209	C	b	0.41b	0.50b	b	b	b	b	b	b						
2.9996	0001 + 087	0.06	209	A	b	0.50b	0.35b	0.57b	0.35b	b	b	b	b						
3.0252	0347 − 383	0.05	214	A	0.80b	0.32b	0.17b	0.33a	0.25a		0.42b	a	a						
3.0432	0334 − 204	0.02	209	B	b	0.68a	0.50a	b	b	b	b	b	b						
3.0465	2000 − 330	0.16	203	B		0.01a	0.01a						a						
3.0474	1442 + 101	0.11	207	C		0.18a	0.14a	a	a		a	a	a						
3.0525	0449 − 135	0.01	207	BD	e			1.43f	1.23d	e									
3.0547	0449 − 135	0.01	209	B	b	B6.95e	B6.95e	1.64d	1.60e	b	b	b	b						
3.0877	0420 − 388	0.01	206	B		0.37b	0.24b					0.32b	b						
3.0917	0334 − 204	0.01	209	B	0.18a	0.69a	0.52a	0.31b	0.30b	b	b	b	b						
3.0972	0537 − 286	0.00	105	C	n	B S0n	B S0n	n	n	n	n		n						
3.1036	0249 − 222	0.02	209	A	b	0.92b	0.77b	0.11a	0.10a	b	b	b	b						
3.1053	0114 − 089	0.02	213	A	c	0.74c	0.44c	0.06a	c		c								
3.1055	0114 − 089	0.02	209	B	c	0.86c	0.34b	c	c	c	c	c	c						
3.1102	1442 + 101	0.10	207	B		0.11a	0.08a	a	a		a	a	a						
3.1238	0642 + 449	0.07	209	B	0.11a	0.29b	0.14b	0.17a	B0.35b	b	B0.28b	b	b						
3.1294	0249 − 222	0.02	209	C	a	0.25a	0.33a	a	a	a	a	a	a						
3.1360	0101 − 304	0.00	209	B	b	0.73c	0.42c	b	b	b	b	b	b						
3.1415	2048 + 312	0.01	209	B	b	1.06e	1.04f	B0.47f	b	b	b	b	b						
3.1430	0837 + 109	0.04	207	B	b	0.27b	0.16a	b	b	b	b		b						
3.1466	0042 − 264	0.04	214	B	a	0.13a	0.12b	a	a	a	a	a	a						
3.1519	2233 + 131	0.03	209	B	1.05c	0.38b	0.16b	0.40b	0.24b	b	0.40c	b	b						
3.1588	2204 − 408	0.00	214	B	b	0.23a	0.10a	b	b	b	b	b	b						
3.1724	2359 + 068	0.01	209	B	b	0.49b	b	b	b	b	b	b	b						
3.1726	2000 − 330	0.13	214	A	†0.20a	0.08a	0.07a	0.15a	0.05a	b	0.09a	b	b						

z_{abs}	QSO	Beta	Ref	GD	CII 1335	CIV 1548	CIV 1551	SiIV 1394	SiIV 1403	SiIII 1206	SiII 1527	AlII 1671	FeII 1608	MgII 2796	MgII 2803	MgI 2852	FeII 2382	FeII 2586	FeII 2599
3.1727	2000 − 330	0.13	203	BD		0.01a	0.01a				a								
3.1881	2000 − 330	0.13	197	C	†0.12b			b	b	b									
3.1910	0055 − 269	0.10	214	A	a	0.56b	0.35b	0.10a	0.07a	a	a	a	a						
3.1914	2000 − 330	0.13	203	AD		0.06a	0.03a				0.05a								
3.1914	2000 − 330	0.13	214	A	†0.49a	0.30a	0.16a	0.14a	0.07a	†0.52d	B0.22a	b	b						
3.1943	0055 − 269	0.10	214	B	a	0.20a	0.12a	a	a	a	a	a	a						
3.218	1601 + 182	0.00	189	B	l	B S0l	B S0l	l	l	l	l	l	l						
3.2205	0302 − 003	0.02	213	C	c	0.17c	0.15b	c	c		c								
3.2230	0956 + 122	0.02	209	B	b	0.23b	0.25b	0.30b	b	b	b		b						
3.2258	1159 + 123	0.06	207	C	a	0.12a	0.12a	a	a	a	a	a	a						
3.2266	0014 + 813	0.04	207	A	a	0.22a	0.12a	B0.12a	a	a	a								
3.2303	2000 − 330	0.12	203	B		0.02a	0.01a				a								
3.2374	0042 − 264	0.01	214	B	a	0.13a	0.10a	a	a	a	a	a	a						
3.2483	0642 + 449	0.04	209	B	b	0.41b	0.18b	b	b	b	b		b						
3.2613	1159 + 123	0.05	207	C	a	0.14a	0.08a	a	a	a	a	a	a						
3.2791	0054 − 284	0.08	209	C	b	b	b	0.19b	0.18b	b	b		b						
3.2921	0042 − 264	0.00	214	B	a	0.06a	0.06a	a	a	†0.38a	a	a	a						
3.3331	2000 − 330	0.10	203	CD							0.01a								
3.3334	2000 − 330	0.10	214	A	†0.33a	0.23a	0.08a	0.22a	0.12a	†0.39b	b	b	b						
3.3375	2000 − 330	0.10	214	B	b	0.09a	0.04a	b	b	†0.31a	b	b	b						
3.373	2227 − 394	0.02	81	A	l	S0l	S0l	S0l	S0l	l	l		l						
3.3897	0000 − 263	0.15	214	A	†0.81a	0.97b	0.82b	†0.79a	†0.36a	b	0.34b	b	0.18b						
3.5263	1159 + 123	-0.01	207	A	a	0.89a	0.78a	0.36a	0.29a	†0.48a	a								
3.5363	0000 − 263	0.12	214	C	b	0.16b	0.13b	b	b	b	b	b	b						
3.5479	2000 − 330	0.05	214	B	b	0.18a	B0.22a	0.19a	B0.06a	b	b	b	b						
3.5522	2000 − 330	0.05	203	BD				0.10a	0.05a										
3.5523	2000 − 330	0.05	214	B	b	0.18a	0.12a	0.18a	0.14a	†0.33a	b	b	b						
3.5573	2000 − 330	0.05	203	CD				0.08a	B0.03a										
3.5575	2000 − 330	0.05	214	B	b	B0.17a	0.07a	0.12a	0.14a	b	b	b	b						
3.5800	0054 − 284	0.01	209	B	0.35b			0.37b	0.24b	b	b								
3.6013	0055 − 269	0.01	214	B	a	0.34b	0.18a	a	a	†0.43a	a	a	a						
4.1324	0000 − 263	-0.01	214	A	a	1.04g	0.89f	B0.10a	a	a	0.39d		a						

Footnotes to Table 1

†Indicates line is in Lyα forest.

B indicates line is part of a blend.

Relative strength codes (numerical equivalent width unavailable):

S0: line detected (may be any strength), S1: weak, S2:medium weak, S3: medium, S4: medium strong, S5:strong.

1σ error codes:

a: ± 0.01
b: ± 0.02
c: ± 0.03
d: ± 0.04
e: ± 0.05
f: ± 0.06
g: ± 0.07
h: ± 0.08
i: ± 0.09
j: ± 0.10
k: ± 0.15
l: ± 0.20
m: ± 0.25
n: ± 0.30
o: ± 0.35
p: ± 0.40
q: ± 0.45
r: ± 0.50
s: ± 1.00
x: (very large or unknown)

Table 2
Additional Lines

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
-0.00030	0454 + 039	211	B	0.59h	NaI5890	-0.00030	0454 + 039	211	B	0.10h	NaI5896
-0.0002	0824 + 110	104	C	B†1.80l	CaII3934	-0.0002	0824 + 110	104	C	B†1.80l	CaII3968
-0.0002	1331 + 170	207	B	0.34e	CaII3968	-0.0002	1331 + 170	207	B	0.40f	CaII3934
-0.0002	1715 + 535	207	C	0.33d	CaII3934	-0.0001	0848 + 163	207	C	0.15a	CaII3934
-0.0001	1017 + 280	207	B	B0.45a	CaII3934	-0.0001	1017 + 280	207	B	0.21b	CaII3968
-0.0001	1311 − 270	152	C	†0.53j	CaII3934	-0.0001	1510 + 115	207	B	0.20d	CaII3968
-0.0001	1510 + 115	207	B	0.41e	CaII3934	-0.00010	1634 + 176	199	C	0.80k	CaII3934
-0.0001	2126 − 158	203	B	0.14c	NaI5890	-0.0001	2126 − 158	203	B	0.12c	NaI5896
0.0000	0215 + 015	196	B	0.09a	NaI5890	0.0000	0215 + 015	196	B	0.05a	NaI5896
0.0000	0235 + 164	69	B	S0x	CaII3934	0.0000	0424 − 131	207	B	0.19c	CaII3934
0.0000	0637 − 752	175	B	S0a	CaII3934	0.0000	0637 − 752	175	B	S0a	CaII3968
0.0000	0955 + 326	99	B	B0.30b	CaII3934	0.0000	0955 + 326	99	B	0.10b	CaII3968
0.0000	1115 + 080A	157	B	0.20c	CaII3934	0.0000	1115 + 080A	157	B	0.20c	CaII3968
0.0000	1226 + 023	120	B	†S5n	OI1302	0.0000	1226 + 023	120	B	†S5n	SiII1260
0.0000	1226 + 023	120	B	†S5n	SiII1304	0.0000	1327 − 206	176	C	1.30l	CaII3934
0.0000	1548 + 114A	186	B	0.70j	CaII3934	0.0000	1548 + 114A	186	B	0.20j	CaII3968
0.0000	1700 + 518	191	C	S0n	CaII3934	0.0000	2020 − 370	142	B	0.32d	CaII3934
0.0001	0952 + 179	199	C	0.46g	CaII3934	0.0001	1037 − 270	202	B	0.50f	CaII3968
0.0001	1037 − 270	202	B	0.70g	CaII3934	0.0001	1038 − 272	202	B	†2.30d	CaII3934
0.0001	1038 − 272	202	B	†1.10f	CaII3968	0.0002	0051 + 291	199	C	0.53h	CaII3934
0.0002	0421 + 019	157	B	0.49b	CaII3934	0.0002	0421 + 019	157	B	0.27b	CaII3968
0.0002	1011 + 250	199	B	0.20e	CaII3934	0.0002	1011 + 250	199	B	0.27e	CaII3968
0.0002	1756 + 237	199	B	0.68e	CaII3934	0.0002	1756 + 237	199	B	0.58e	CaII3968
0.0002	1126 + 101	199	C	0.25d	CaII3934	0.0047	0955 + 326	99	B	0.40b	CaII3934
0.0047	0955 + 326	99	B	0.20b	CaII3968	0.01529	1037 − 270	202	C	0.59g	CaII3934
0.01529	1037 − 270	202	C	0.49g	CaII3968	0.0180	1327 − 206	176	B	B2.16q	NaI5890
0.0180	1327 − 206	176	B	B2.16q	NaI5896	0.0288	2020 − 370	142	B	0.34d	CaII3934
0.0288	2020 − 370	142	B	0.21d	CaII3968	0.0667	0446 − 208	146	B	0.84j	CaII3934
0.0667	0446 − 208	146	B	0.37j	CaII3968	0.071	1228 + 077	164	C	0.37j	CaII3934
0.071	1228 + 077	164	C	0.19j	CaII3968	0.152	0637 − 752	175	B	S0a	CaII3934
0.152	0637 − 752	175	B	S0a	CaII3968	0.200	2135 − 147	185	B	1.42p	HI1216
0.200	2135 − 147	185	B	0.67p	SiII1260	0.24	1217 + 023	8	C	S0r	CaII3934
0.3271	1159 + 123	207	C	†1.57g	CaII3934	0.3271	1159 + 123	207	C	†1.12h	CaII3968
0.351	1510 − 089	175	B	S0o	CaII3934	0.424	0735 + 178	150	B	0.14k	HI1026
0.424	0735 + 178	150	B	0.42k	HI1216	0.424	0735 + 178	150	B	0.14k	HI 938
0.424	0735 + 178	150	B	0.07k	HI 950	0.424	0735 + 178	150	B	0.28k	HI 973
0.424	0735 + 178	150	B	0.14k	OVI1032	0.424	0735 + 178	150	B	0.14k	SiII1021
0.4717	0457 + 024	104	A	†0.68l	MnII2576	0.4745	0454 − 220	175	A	S0l	CaII3934
0.5242	0235 + 164	88	A	0.96j	FeII2344	0.5242	0235 + 164	88	A	0.65j	FeII2374
0.5242	0235 + 164	88	A	0.46j	MnII2606	0.6128	0058 + 019	207	A	0.95b	FeII2344
0.6128	0058 + 019	207	A	0.81c	FeII2374	0.6296	1209 + 107	152	A	†0.70e	FeII2374
0.6296	1209 + 107	152	A	†1.60k	FeII2344	0.655	1137 + 660	8	C	S0r	CaII3934
0.655	1137 + 660	8	C	S0r	CaII3968	0.6637	0824 + 110	104	C	†1.02j	FeII2344
0.6637	0824 + 110	104	C	†0.42j	FeII2374	0.6924	1328 + 307	124	A	0.06j	FeII2344
0.6924	1328 + 307	124	A	0.12j	FeII2374	0.70300	0805 + 046	148	B	†1.64j	CrII2056
0.70300	0805 + 046	148	B	†1.23j	FeII2344	0.7032	1311 − 270	152	C	0.39h	FeII2344
0.7261	0453 − 423	121	A	†1.10a	FeII2344	0.7440	1331 + 170	207	A	0.22b	FeII2344
0.7454	1331 + 170	207	A	0.17b	FeII2344	0.7520	2206 − 199	207	A	†0.50e	FeII2374
0.7520	2206 − 199	207	A	†1.40g	FeII2344	0.7877	0836 + 113	212	A	†0.78h	FeII2260
0.7877	0836 + 113	212	A	†1.77j	FeII2344	0.7877	0836 + 113	212	A	†0.66j	FeII2367

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
0.7877	0836 + 113	212	A	†1.05j	FeII2374	0.805	0642 + 449	58	C	B†S3j	FeII2344
0.8366	0002 − 422	121	A	B†1.47a	FeII2344	0.8366	0002 − 422	121	A	†0.60a	FeII2374
0.8366	0002 − 422	121	A	†0.71a	FeII2374	0.8370	0002 − 422	206	CD	1.07i	CaII3934
0.8464	0051 + 291	87	A	S0g	FeII2344	0.8464	0051 + 291	87	A	S0g	FeII2374
0.8466	0051 + 291	199	A	0.34b	FeII2374	0.8466	0051 + 291	199	A	0.54c	FeII2344
0.8528	1327 − 206	176	A	0.27m	FeII2344	0.8528	1327 − 206	176	A	S1m	MnII2576
0.8596	0454 + 039	87	A	0.59g	FeII2344	0.8596	0454 + 039	87	A	0.38g	FeII2374
0.8873	1623 + 2689	207	A	†0.21b	AlIII1863	0.8876	1623 + 2689	210	AD	†0.68e	MgI2026
0.8876	1623 + 2689	210	AD	0.22e	MnII2576	0.8876	1623 + 2689	210	AD	0.18e	MnII2594
0.8885	1623 + 2689	207	A	†0.36b	AlIII1855	0.8885	1623 + 2689	207	A	†0.46b	AlIII1863
0.8897	1011 + 280	106	A	0.26k	FeII2344	0.9087	0453 − 423	121	A	0.21a	FeII2344
0.9378	1226 + 105	104	B	S2r	FeII2344	0.9378	1226 + 105	104	B	S2r	FeII2374
0.9539	1331 + 170	207	C	0.80d	FeII2374	0.95942	0805 + 046	148	B	†0.87j	AlIII1855
0.95942	0805 + 046	148	B	†0.56j	AlIII1863	0.95942	0805 + 046	148	B	†0.46j	FeII2344
1.0077	0440 − 168	207	A	0.82c	FeII2374	1.01450	0805 + 046	148	B	†0.45j	AlIII1855
1.01450	0805 + 046	148	B	0.15j	FeII2344	1.0169	2206 − 199	207	A	0.23b	FeII2374
1.0169	2206 − 199	207	A	†0.34e	AlIII1863	1.0169	2206 − 199	207	A	0.60e	FeII2344
1.0169	2206 − 199	207	A	†0.63e	MgI2026	1.0347	0424 − 131	207	B	7.19c	FeII2344
1.0347	0424 − 131	207	B	0.33c	FeII2374	1.0398	1623 + 2689	207	B	0.20a	FeII2344
1.0445	0207 − 003	207	A	0.09a	FeII2367	1.0463	2344 + 125	207	A	0.33b	FeII2374
1.0463	2344 + 125	207	A	0.61c	FeII2344	1.1109	0014 + 813	207	A	†0.90c	FeII2374
1.1109	0014 + 813	207	A	†1.25d	FeII2367	1.1127	0014 + 813	207	A	†0.18c	FeII2367
1.1127	0014 + 813	207	A	†2.24e	FeII2344	1.1495	0453 − 423	86	A	2.33h	FeII2344
1.1495	0453 − 423	86	A	1.35h	FeII2374	1.1496	0453 − 423	121	BD	2.05a	FeII2344
1.1496	0453 − 423	121	BD	1.67a	FeII2374	1.1516	0453 − 423	121	BD	0.65a	FeII2344
1.1746	0450 − 132	207	B	0.85c	FeII2344	1.1746	0450 − 132	207	B	0.57d	FeII2374
1.1983	0256 − 000	214	A	†0.59d	FeII2374	1.1983	0256 − 000	214	A	†1.49k	FeII2367
1.2015	1246 − 057	93	C	0.23e	FeII2344	1.2448	0112 + 030	207	AD	1.82d	FeII2344
1.2560	0101 − 304	209	A	0.27c	FeII2344	1.266	0029 + 002	26	C	0.53h	FeII2344
1.2662	0449 − 135	207	BD	0.51b	FeII2344	1.2662	0449 − 135	207	BD	0.31c	FeII2374
1.2665	0449 − 135	209	B	1.14f	FeII2344	1.2878	0249 − 184	209	A	0.40c	FeII2344
1.2878	0249 − 184	209	A	0.21c	FeII2367	1.2878	0249 − 184	209	A	0.57d	FeII2374
1.3289	0316 − 203	209	B	B0.51c	FeII2344	1.3447	0215 + 015	196	BD	0.03a	MnII2576
1.345	0215 + 015	156	A	0.14b	AlIII1855	1.345	0215 + 015	156	A	0.13b	AlIII1863
1.345	0215 + 015	156	A	0.23b	CI1657	1.345	0215 + 015	156	A	0.14b	SiII1808
1.345	0215 + 015	156	A	0.90d	FeII2344	1.345	0215 + 015	156	A	0.38d	FeII2374
1.3586	1225 + 317	102	B	S1g	FeII2344	1.3650	0237 − 233	152	AD	0.33g	AlIII1863
1.3650	0237 − 233	152	AD	0.30h	AlIII1855	1.3654	0237 − 233	207	A	0.36a	AlIII1855
1.3654	0237 − 233	207	A	0.25a	AlIII1863	1.3654	0237 − 233	207	A	0.49c	FeII2344
1.3781	0132 − 198	209	A	0.68c	FeII2344	1.3855	0148 − 097	209	C	0.25b	FeII2374
1.3910	0957 + 561A	140	A	0.92m	FeII2344	1.3910	0957 + 561A	140	A	0.29m	FeII2374
1.3910	0957 + 561B	140	A	0.54m	FeII2344	1.3910	0957 + 561B	140	A	0.29m	FeII2374
1.4051	0352 − 275	209	A	0.63c	FeII2374	1.4051	0352 − 275	209	A	1.29d	FeII2344
1.4542	2000 − 330	214	B	†0.25a	FeII2344	1.4542	2000 − 330	214	B	†0.05a	FeII2367
1.4573	0347 − 383	214	A	0.22b	FeII2344	1.46	1756 + 237	122	AD	†S0p	OI1302
1.4698	0229 + 131	207	C	0.20b	AlIII1855	1.4755	0854 + 191	207	C	0.43c	MgI1828
1.4892	0334 − 204	209	C	0.46d	FeII2344	1.4922	1011 + 091	178	A	S0p	FeII2344
1.5103	0216 + 080	209	B	0.63e	FeII2344	1.5190	0438 − 136	214	A	0.28c	FeII2374
1.5190	0438 − 136	214	A	0.80d	FeII2344	1.5190	0438 − 136	214	A	†1.03e	MgI2026
1.5269	0420 + 007	209	C	0.48d	FeII2344	1.5794	0143 − 015	209	B	0.58e	FeII2344

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
1.5794	0143 − 015	209	B	B0.66e	FeII2374	1.5990	1011 + 250	67	CD	†S5o	HI1216
1.6083	1548 + 114B	186	A	†0.58j	SiII1304	1.6115	1556 + 335	200	AD	0.27c	SiII1260
1.612	1756 + 237	122	BD	†S0o	HI1216	1.6126	0143 − 015	209	C	B0.65d	FeII2344
1.6229	0824 + 110	104	B	0.31g	AlIII1855	1.6229	0824 + 110	104	B	0.38g	AlIII1863
1.6250	0017 + 154	67	A	†S2a	SiII1260	1.6256	1225 + 317	102	BD	B†1.33f	HI1216
1.6378	0421 + 019	157	A	†0.17c	SiII1260	1.6524	1556 + 335	200	AD	0.28c	NV1239
1.6524	1556 + 335	200	AD	0.16c	NV1243	1.6535	1556 + 335	199	A	0.55d	SiII1260
1.6535	1553 + 335	200	AD	0.55d	SiII1260	1.6576	0237 − 233	207	A	0.11a	AlIII1855
1.6576	0237 − 233	207	A	0.11a	AlIII1863	1.6576	0237 − 233	207	A	†0.16a	SiII1260
1.6588	0237 − 233	207	B	†0.09a	SiII1260	1.6604	0237 − 233	207	B	†0.13a	SiII1260
1.6605	0731 + 653	209	B	0.62c	FeII2344	1.6605	0731 + 653	209	B	0.51c	FeII2374
1.6606	1413 + 117	178	A	S0k	AlIII1855	1.6606	1413 + 117	178	A	S0k	AlIII1863
1.6606	1413 + 117	178	A	S0k	FeII2344	1.6723	0237 − 233	206	A	0.43c	FeII2374
1.6724	0237 − 233	207	A	0.07a	AlIII1863	1.6724	0237 − 233	207	A	†0.14a	SiII1260
1.673	1756 + 237	122	BD	†4.71o	HI1216	1.673	1756 + 237	122	BD	0.60o	OI1302
1.673	1756 + 237	122	BD	†0.41o	SiII1190	1.673	1756 + 237	122	BD	†0.37o	SiII1193
1.673	1756 + 237	122	BD	1.31o	SiII1260	1.673	1756 + 237	122	BD	0.67o	SiII1304
1.6740	0237 − 233	207	A	†0.21a	SiII1260	1.676	1756 + 237	66	BD	S0n	FeII2344
1.676	1756 + 237	66	BD	†S0n	HI1216	1.6868	0146 + 017	209	B	0.25b	FeII2374
1.6868	0146 + 017	209	B	0.81c	FeII2344	1.6998	1115 + 080A	157	B	†0.07a	HI1216
1.6998	1115 + 080A	157	B	0.15a	NV1239	1.6998	1115 + 080A	157	B	0.07a	NV1243
1.7040	0307 − 195A	170	A	†0.89j	HI1216	1.7193	0100 + 130	77	C	S0a	AlIII1855
1.7193	0100 + 130	77	C	S0a	AlIII1863	1.7193	0100 + 130	77	C	†S0a	HI1216
1.7193	0100 + 130	77	C	†S0a	NI1200	1.7193	0100 + 130	77	C	†S0a	NV1239
1.7193	0100 + 130	77	C	†S0a	NV1243	1.7193	0100 + 130	77	C	†S0a	SiII1190
1.7193	0100 + 130	77	C	†S0a	SiII1193	1.7193	0100 + 130	77	C	†S0a	SiII1260
1.7193	0100 + 130	77	C	†S0a	SiII1304	1.7193	0100 + 130	77	C	†S0a	SiII*1194
1.7193	0100 + 130	77	C	†S0a	SiII*1197	1.7193	0100 + 130	77	C	†S0a	SiII*1265
1.7193	0100 + 130	77	C	†S0a	SiII*1309	1.7193	0100 + 130	77	C	†S0a	SiII*1533
1.723	1756 + 237	130	CD	S5e	HI1216	1.7234	1448 − 232	172	A	†0.59c	HI1216
1.7283	1115 + 080A	157	C	0.22a	HI1216	1.7304	1115 + 080A	157	C	0.18a	HI1216
1.732	0254 − 3342	155	A	†0.92h	HI1216	1.732	0254 − 3342	155	A	†0.26h	NV1239
1.732	0254 − 3342	155	A	†0.70h	NV1243	1.732	1756 + 237	122	B	0.77o	HI1216
1.732	1756 + 237	122	B	†0.44o	SiII1190	1.732	1756 + 237	122	B	0.07o	SiII1260
1.7322	1115 + 080A	157	B	0.33a	HI1216	1.7322	1115 + 080A	157	B	0.22a	NV1239
1.7322	1115 + 080A	157	B	0.15a	NV1243	1.7339	0029 + 002	26	A	0.44g	AlIII1855
1.7339	0029 + 002	26	A	0.22g	AlIII1863	1.7353	1115 + 080A	157	B	0.73a	HI1216
1.7403	0119 − 046	158	A	†1.11a	HI1216	1.7444	0002 + 051	157	A	†1.06e	HI1216
1.7564	1548 + 114B	186	B	†2.03j	HI1216	1.7667	1017 + 280	207	B	†0.55a	HI1216
1.7690	0216 + 080	209	B	B0.87a	FeII2344	1.7690	0216 + 080	209	B	0.58d	FeII2374
1.773	0932 + 501	179	CD	BS0j	AlIII1855	1.773	0932 + 501	179	CD	BS0j	AlIII1863
1.7741	1151 + 068	212	A	0.52c	FeII2344	1.7741	1151 + 068	212	A	0.40c	FeII2374
1.7741	1151 + 068	212	A	†0.44f	OI1302	1.7741	1151 + 068	212	A	†0.51f	SiII1260
1.7741	1151 + 068	212	A	†0.47i	CI1277	1.7751	1331 + 170	152	B	†1.66j	OI1302
1.7751	1331 + 170	152	B	†1.63j	SiII1260	1.7751	1331 + 170	152	B	B†18.06r	HI1216
1.7760	1331 + 170	42	AD	B1.84f	FeII2344	1.7760	1331 + 170	42	AD	B0.61f	FeII2374
1.7760	1331 + 170	42	AD	B†18.01f	HI1216	1.7760	1331 + 170	42	AD	†0.65f	SiII1260
1.7764	1331 + 170	152	AD	B†18.06r	HI1216	1.7771	1331 + 170	206	AD	0.17d	FeII2374
1.7771	1331 + 170	206	AD	1.51f	FeII2344	1.7869	1331 + 170	206	AD	0.58f	FeII2374
1.7869	1331 + 170	206	AD	0.93g	FeII2344	1.7886	0307 − 195B	170	A	†0.75g	NI1200

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
1.7886	0307 − 195B	170	A	†1.33g	SiII1193	1.7886	0307 − 195B	170	A	†1.18g	SiII1260
1.7886	0307 − 195B	170	A	†0.72g	SiII1304	1.7886	0307 − 195B	170	A	†3.05j	HI1216
1.7886	0307 − 195B	170	A	†0.86j	OI1302	1.7942	1225 + 317	74	AD	†S0k	HI1216
1.7942	1225 + 317	74	AD	†S0k	SiII1260	1.7946	1225 + 317	128	A	0.29g	FeII2344
1.7946	1225 + 317	128	A	0.11g	FeII2374	1.7950	1225 + 317	102	AD	0.25f	AlIII1855
1.7950	1225 + 317	102	AD	0.18f	AlIII1863	1.7950	1225 + 317	102	AD	0.29f	FeII2344
1.7950	1225 + 317	102	AD	S1f	FeII2374	1.7950	1225 + 317	102	AD	†2.25f	HI1216
1.7950	1225 + 317	102	AD	†S1f	NI1135	1.7950	1225 + 317	102	AD	†0.50f	NI1200
1.7950	1225 + 317	102	AD	B†S1f	NV1239	1.7950	1225 + 317	102	AD	†0.75f	SiII1190
1.7950	1225 + 317	102	AD	†S1f	SiII1193	1.7950	1225 + 317	102	AD	†0.82f	SiII1193
1.7950	1225 + 317	102	AD	B†1.54f	SiII1260	1.7950	1225 + 317	102	AD	B†0.47f	SiII1304
1.7974	0100 + 130	77	B	S0a	AlIII1855	1.7974	0100 + 130	77	B	†S0a	CIII1176
1.7974	0100 + 130	77	B	†S0a	FeII1143	1.7974	0100 + 130	77	B	†S0a	HI1216
1.7974	0100 + 130	77	B	†S0a	NI1135	1.7974	0100 + 130	77	B	†S0a	NI1200
1.7974	0100 + 130	77	B	†S0a	OI1302	1.7974	0100 + 130	77	B	†S0a	SII1254
1.7974	0100 + 130	77	B	B†S0a	SII1260	1.7974	0100 + 130	77	B	†S0a	SIII1190
1.7974	0100 + 130	77	B	†S0a	SiII1190	1.7974	0100 + 130	77	B	†S0a	SiII1193
1.7974	0100 + 130	77	B	B†S0a	SiII1260	1.7974	0100 + 130	77	B	†S0a	SiII1304
1.7974	0100 + 130	77	B	†S0a	SiII*1194	1.7974	0100 + 130	77	B	†S0a	SiII*1197
1.7974	0100 + 130	77	B	†S0a	SiII*1265	1.7974	0100 + 130	77	B	†S0a	SiII*1533
1.7974	0100 + 130	77	B	S0a	SiII*1817	1.7984	1017 + 280	207	A	†1.05a	HI1216
1.808	0254 − 3342	155	B	†1.07g	HI1216	1.808	0254 − 3342	155	B	†1.21g	NV1239
1.808	0254 − 3342	155	B	†1.21g	NV1239	1.808	0254 − 3342	155	B	2.14g	NV1243
1.8091	1228 + 078	152	A	0.34f	NV1243	1.8091	1228 + 078	152	A	0.36g	NV1239
1.8091	1228 + 078	152	A	B†1.41j	HI1216	1.8096	0846 + 156	209	C	0.47c	FeII2374
1.8148	0122 − 380	154	B	†0.99e	HI1216	1.815	0254 − 3342	155	B	†0.46g	HI1216
1.815	0254 − 3342	155	B	3.06g	NV1243	1.8189	1151 + 068	212	A	†1.26f	HI1216
1.8189	1151 + 068	212	A	†0.38i	SiII1304	1.824	2136 + 141	201	B	B†S0o	HI1216
1.8265	0254 − 3342	155	A	†1.66g	HI1216	1.8265	0254 − 3342	155	A	†1.66g	HI1216
1.8265	0254 − 3342	155	A	B7.89g	NV1243	1.8293	0051 + 291	55	C	†S0l	HI1216
1.831	0049 + 014	201	B	†S0a	HI1216	1.831	0049 + 014	201	B	†S0a	NV1239
1.831	0049 + 014	201	B	†S0a	NV1243	1.8322	0254 − 3342	155	A	†1.24g	HI1216
1.8322	0254 − 3342	155	A	B7.87g	NV1243	1.833	0932 + 501	179	CD	BS0j	AlIII1855
1.833	0932 + 501	179	CD	BS0j	AlIII1863	1.837	0958 + 731	133	B	†S0o	SiII1260
1.837	0958 + 731	133	B	†S0o	SiII*1265	1.837	0958 + 731	133	B	S0o	SiII*1533
1.8374	0254 − 3342	155	A	†2.26g	HI1216	1.8374	0254 − 3342	155	A	†2.26g	HI1216
1.83835	1101 − 264	180	A	†0.45a	SiII1260	1.83870	1101 − 264	180	A	†0.25a	OI1302
1.840	1101 − 264	154	AD	†2.82d	HI1216	1.840	1101 − 264	154	AD	†0.18d	OI1302
1.840	1101 − 264	154	AD	†0.42d	SiII1190	1.840	1101 − 264	154	AD	†0.74d	SiII1193
1.840	1101 − 264	154	AD	†0.67d	SiII1260	1.840	1101 − 264	154	AD	†0.49d	SiII1304
1.8424	0854 + 191	207	B	†1.36c	HI1216	1.8502	1038 − 272	205	A	†0.22b	OI1302
1.8502	1038 − 272	205	A	0.22c	AlIII1855	1.8502	1038 − 272	205	A	B†0.65c	OI1302
1.8502	1038 − 272	205	A	†1.93d	HI1216	1.8502	1038 − 272	205	A	†1.56e	SiII1190
1.8502	1038 − 272	205	A	†0.41e	SiII1193	1.8550	0854 + 191	207	B	†1.07c	HI1216
1.856	0254 − 3342	155	B	†0.67g	HI1216	1.8606	0123 + 257	63	C	B†S4e	HI1216
1.8606	0123 + 257	63	C	B†S3e	NI1200	1.8606	0123 + 257	63	C	†S3e	SII1260
1.8606	0123 + 257	63	C	B†S2e	SIII1190	1.8606	0123 + 257	63	C	B†S2e	SiII1190
1.8672	0446 − 208	146	A	†0.94c	HI1216	1.8672	0446 − 208	146	A	0.17c	NV1239
1.874	1333 + 286	29	B	†S0l	HI1216	1.874	1333 + 286	29	B	BS0l	NV1239
1.874	1333 + 286	29	B	BS0l	NV1243	1.8804	1623 + 2689	207	B	†0.49a	HI1216

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
1.8804	1623 + 2689	207	B	†0.15a	SiII1260	1.8804	1623 + 2689	207	B	†0.29b	SiII1193
1.8870	1225 + 317	102	BD	†0.97f	HI1216	1.8870	1225 + 317	102	BD	B†S1f	NI1200
1.8870	1225 + 317	102	BD	†0.42f	SiII1193	1.8910	2225 − 055	26	C	S0j	SiII1260
1.8925	1548 + 114B	186	A	0.10c	NV1239	1.8925	1548 + 114B	186	A	0.14f	SiII1260
1.8925	1548 + 114B	186	A	†1.35j	HI1216	1.8936	1038 − 272	205	B	B†1.62c	HI1216
1.894	1258 + 286	130	BD	†S5d	HI1216	1.8968	1225 + 317	102	BD	B†1.48f	HI1216
1.8968	1225 + 317	102	BD	†S2f	NV1239	1.8968	1225 + 317	102	BD	B†S1f	NV1243
1.8971	0551 − 366	206	A	0.59j	FeII2344	1.8971	1228 + 077	206	A	0.59j	FeII2344
1.8996	0237 − 233	207	C	†0.84a	HI1216	1.9106	0122 − 380	154	A	†2.16d	HI1216
1.9122	1037 − 270	205	A	†0.26b	SiII1304	1.9122	1037 − 270	205	A	†0.61c	NV1239
1.9122	1037 − 270	205	A	†0.30c	NV1243	1.9122	1037 − 270	205	A	†0.68c	SiII1260
1.9122	1037 − 270	205	A	†0.88d	HI1216	1.9131	0736 − 063	152	B	1.81j	HI1216
1.9140	1037 − 270	205	A	†0.32b	OI1302	1.915	2154 − 205	184	B	†S0n	HI1216
1.9175	0848 + 163	207	A	†0.70a	HI1216	1.9175	0848 + 163	207	A	0.76a	NV1239
1.9175	0848 + 163	207	A	0.60a	NV1243	1.9206	2206 − 199	207	A	0.27b	SiII1808
1.9206	2206 − 199	207	A	0.70c	AlIII1855	1.9206	2206 − 199	207	A	0.47c	AlIII1863
1.9206	2206 − 199	207	A	†0.59d	NV1243	1.9206	2206 − 199	207	A	†1.55d	OI1302
1.9206	2206 − 199	207	A	†0.83d	SiII1304	1.9210	2206 − 199	185	B	1.27f	FeII2344
1.9210	2206 − 199	185	B	0.82f	FeII2374	1.9310	0736 − 063	152	A	1.25i	HI1216
1.935	0151 + 048	130	AD	S5d	HI1216	1.9368	1222 + 228	152	B	†1.89j	HI1216
1.9436	1157 + 014	152	A	0.64f	SiII1304	1.9436	1157 + 014	152	A	0.88h	OI1302
1.9441	1157 + 014	211	A	0.29e	MnII2576	1.9443	1157 + 014	112	B	0.34f	CII*1336
1.9458	0802 + 103	65	A	†4.07d	HI1216	1.9458	0802 + 103	65	A	S0d	NV1239
1.9458	0802 + 103	65	A	0.88d	NV1243	1.9458	0802 + 103	65	A	†S0d	SiII1193
1.9458	0802 + 103	65	A	1.26d	SiII1260	1.9458	0802 + 103	65	A	0.34d	SiII*1533
1.9499	0802 + 103	65	A	†S0d	HI1216	1.9499	0802 + 103	65	A	1.93d	NV1239
1.9499	0802 + 103	65	A	S1d	NV1243	1.9499	0802 + 103	65	A	S0d	SiII1260
1.9499	0802 + 103	65	A	S1d	SiII*1265	1.950	1116 + 128	9	B	B†S0m	NV1239
1.9517	2225 − 055	26	C	S0j	SiII1260	1.9550	1038 − 272	205	B	B†0.39b	NV1243
1.9550	1038 − 272	205	B	†0.68b	OI1302	1.9550	1038 − 272	205	B	B†0.19b	SiII1260
1.9550	1038 − 272	205	B	B†0.29b	SiII1304	1.9550	1038 − 272	205	B	B†2.20c	HI1216
1.9550	1038 − 272	205	B	B†1.59c	SiII1190	1.9551	1038 − 272	202	AD	†0.30c	SiII1260
1.9560	0237 − 233	15	C	BS3b	CII*1336	1.9560	0237 − 233	15	C	†S5b	NV1239
1.9560	0237 − 233	15	C	B†S3b	NV1243	1.9560	0237 − 233	15	C	BS5b	SI1402
1.9560	0237 − 233	15	C	BS2b	SI1425	1.9560	0237 − 233	15	C	†S5b	SII1251
1.9560	0237 − 233	15	C	B†S2b	SII1254	1.9560	0237 − 233	15	C	B†S1b	SII1260
1.9560	0237 − 233	15	C	B†S1b	SiII1260	1.9560	0237 − 233	15	C	†S4b	TiIII1299
1.9600	1038 − 272	205	A	B†0.29b	OI1302	1.9600	1038 − 272	205	A	B†1.69c	HI1216
1.9600	1038 − 272	205	A	B†2.07c	NV1239	1.9615	0551 − 366	152	A	†0.64g	SII1254
1.9615	0551 − 366	152	A	†1.81h	SiII1304	1.9615	0551 − 366	152	A	†2.61i	OI1302
1.9615	0551 − 366	152	A	B†1.89j	NI1200	1.9615	0551 − 366	152	A	B†2.65j	SiII1260
1.9615	0551 − 366	152	A	†11.95m	HI1216	1.9625	0551 − 366	185	B	2.36j	FeII2344
1.9625	0551 − 366	185	B	1.42j	FeII2374	1.9644	0119 − 046	158	A	0.13a	CII*1336
1.9644	0119 − 046	158	A	B1.52a	HI1216	1.9644	0119 − 046	158	A	B1.35a	NV1239
1.9644	0119 − 046	158	A	B1.52a	NV1243	1.9699	0122 − 380	154	B	†1.21d	HI1216
1.9722	1037 − 270	205	A	†0.16b	NV1243	1.9722	1037 − 270	205	A	†0.25c	SiII1193
1.9722	1037 − 270	205	A	†1.59d	NV1239	1.9722	1037 − 270	205	A	†1.67e	HI1216
1.9722	1037 − 270	205	A	†2.45e	SiII1260	1.9724	0119 − 046	158	A	0.71a	HI1216
1.9724	0119 − 046	158	A	0.30a	NV1243	1.9726	1037 − 270	195	AD	B†2.93r	HI1216
1.9729	1623 + 2689	207	B	†1.45b	HI1216	1.9729	1623 + 2689	207	B	†0.09b	SiII1193

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
1.9739	0122 − 380	154	A	†1.48d	HI1216	1.9739	0122 − 380	154	A	†0.37d	NV1239
1.9739	0122 − 380	154	A	†0.17d	NV1243	1.9751	0119 − 046	158	A	0.54a	HI1216
1.9751	0119 − 046	158	A	0.13a	NV1243	1.9795	0122 − 380	154	C	†0.30d	HI1216
1.987	0747 + 613	133	B	†S0n	HI1216	1.987	0747 + 613	133	B	†S0n	SiII1260
1.9961	2116 − 358	206	A	0.33d	FeII2374	1.9961	2116 − 358	206	A	0.74e	FeII2344
1.9965	1159 + 123	207	C	0.56b	FeII2344	1.9975	1159 + 123	207	C	0.21a	FeII2374
1.9975	1159 + 123	207	C	†0.38b	SiII1808	1.9993	0421 + 019	157	A	†0.19a	HI1216
2.0018	0123 + 257	63	C	B†S3e	FeII1145	2.0018	0123 + 257	63	C	†S4e	HI1216
2.0018	0123 + 257	63	C	†S2e	NV1243	2.0018	0123 + 257	63	C	B†S3e	SII1251
2.0140	2206 − 199	207	B	†0.30b	SiII1260	2.0140	2206 − 199	207	B	0.20b	SiII1808
2.0140	2206 − 199	207	B	†1.02c	HI1216	2.0140	2206 − 199	207	B	†0.48d	SiII1304
2.0144	1038 − 272	205	C	B†0.28b	NV1243	2.0144	1038 − 272	205	C	B†2.04c	HI1216
2.0200	0118 − 031B	194	A	0.43c	OI1302	2.0200	0118 − 031B	194	A	0.76d	SiII1260
2.0200	0118 − 031B	194	A	0.43d	SiII1304	2.0200	0118 − 031B	194	A	†0.56f	SiII1190
2.0200	0118 − 031B	194	A	†0.79i	SiII1193	2.0200	0118 − 031B	194	A	†0.86k	HI1216
2.0218	0820 + 296	67	C	†S0a	HI1216	2.0218	0820 + 296	67	C	†S0a	OI1302
2.0218	0820 + 296	67	C	†S0a	SiII1190	2.0218	0820 + 296	67	C	†S0a	SiII1193
2.0218	0820 + 296	67	C	†S0a	SiII1260	2.0231	0123 + 257	63	C	B†S3e	FeII1145
2.0231	0123 + 257	63	C	†S4e	HI1216	2.0231	0123 + 257	63	C	B†S3e	NI1135
2.0231	0123 + 257	63	C	†S3e	SII1260	2.0231	2126 − 158	206	B	0.20d	FeII2344
2.0257	0029 + 002	26	A	†1.29f	HI1216	2.0263	1037 − 270	195	AD	†3.54r	HI1216
2.0263	1037 − 270	195	AD	†2.88r	SiII1193	2.0263	1037 − 270	195	AD	†4.73x	SiII1260
2.0282	0013 − 004	207	A	0.18b	OI1302	2.0282	0013 − 004	207	A	0.37c	SiII1304
2.0289	1037 − 270	205	A	0.28a	OI1302	2.0289	1037 − 270	205	A	B†4.47b	SiII1260
2.0289	1037 − 270	205	A	†0.59c	SiII1190	2.0289	1037 − 270	205	A	†1.56d	HI1216
2.0322	0307 − 195B	170	A	0.20f	SiII1260	2.0322	0307 − 195B	170	A	†1.71i	HI1216
2.0330	2000 − 330	214	C	†0.55a	AlIII1855	2.0330	2000 − 330	214	C	0.12a	FeII2374
2.0330	2000 − 330	214	C	0.44b	FeII2344	2.0343	0424 − 131	207	C	†0.73a	HI1216
2.0343	0424 − 131	207	C	†0.28a	SiII1260	2.0353	0307 − 195A	170	B	0.13c	SiII1260
2.0353	0307 − 195A	170	B	†1.84f	HI1216	2.0384	0123 + 257	63	C	B†S4e	FeII1145
2.0384	0123 + 257	63	C	†S4e	HI1216	2.0384	0123 + 257	63	C	†S3e	NI1200
2.0384	0123 + 257	63	C	B†S2e	SIII1190	2.0384	0123 + 257	63	C	B†S2e	SiII1190
2.0435	1309 − 056	152	A	†1.47h	NV1243	2.0435	1309 − 056	152	A	†1.72j	NV1239
2.0435	1309 − 056	152	A	†1.76n	HI1216	2.0500	1623 + 2689	207	A	†0.13a	NV1239
2.0500	1623 + 2689	207	A	†0.11a	NV1243	2.0526	1623 + 2689	207	A	†0.10a	NV1243
2.0526	1623 + 2689	207	A	†0.11a	SiII1193	2.0526	1623 + 2689	207	A	†2.40b	HI1216
2.0526	1623 + 2689	207	A	†0.13b	SiII1260	2.05337	1623 + 2689	210	AD	†2.93c	HI1216
2.05337	1623 + 2689	210	AD	†0.11c	SiII1260	2.0652	1038 − 272	205	C	B†0.21a	SiII1190
2.0652	1038 − 272	205	C	B†0.19a	SiII1304	2.0652	1038 − 272	205	C	B†0.19b	HI1216
2.0652	1038 − 272	205	C	B†0.87b	NV1243	2.070	1413 + 117	178	A	S0k	AlIII1863
2.070	1413 + 117	178	A	†S0k	HI1216	2.0708	1037 − 270	205	A	B†1.40b	NV1239
2.0708	1037 − 270	205	A	B†4.41b	NV1243	2.0708	1037 − 270	205	A	0.23b	OI1302
2.0708	1037 − 270	205	A	†0.41c	SiII1190	2.0708	1037 − 270	205	A	†1.57d	HI1216
2.0716	1037 − 270	202	A	†0.98f	HI1216	2.0718	0100 + 130	35	C	B†S2k	FeIII1123
2.0718	0100 + 130	35	C	†S2k	HI1216	2.0718	0100 + 130	35	C	B†S1k	NII1084
2.0720	1037 − 270	195	BD	†1.14l	HI1216	2.0743	1136 + 122	212	C	†0.23a	SiII1260
2.0743	1136 + 122	212	C	†0.08a	SiII1304	2.0743	1136 + 122	212	C	†1.10b	OI1302
2.0743	1136 + 122	212	C	†0.45c	SiII1193	2.0743	1136 + 122	212	C	†2.68e	HI1216
2.0755	1037 − 270	205	C	B†0.64b	SiII1193	2.0768	1038 − 272	205	A	†0.20a	OI1302
2.0768	1038 − 272	205	A	B†0.21b	NV1239	2.0768	1038 − 272	205	A	B†0.19b	NV1243

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.0825	1037 − 270	205	A	†0.35a	NV1243	2.0825	1037 − 270	205	A	0.42a	SiII1260
2.0825	1037 − 270	205	A	0.13a	SiII1304	2.0825	1037 − 270	205	A	B†4.39b	NV1239
2.0825	1037 − 270	205	A	B†0.64b	SiII1190	2.0825	1037 − 270	205	A	†1.01c	SiII1193
2.0825	1037 − 270	205	A	B†2.36d	HI1216	2.0826	1037 − 270	195	AD	B1.10l	SiII1260
2.0826	1037 − 270	195	AD	†2.27x	HI1216	2.0830	1037 − 270	202	CD	†0.97f	HI1216
2.0851	1038 − 272	205	C	†0.55a	OI1302	2.0851	1038 − 272	205	C	†0.90c	SiII1193
2.0855	1510 + 115	207	B	†1.56b	HI1216	2.0856	1624 + 2685	210	C	†0.60c	HI1216
2.0856	1624 + 2685	210	C	0.11c	SiII1260	2.088	1550 − 269	184	B	†S0n	HI1216
2.0893	1510 + 115	207	A	B5.77c	NV1243	2.0919	0307 − 195A	170	C	†0.55f	HI1216
2.0919	0307 − 195A	170	C	0.16f	SiII1260	2.094	1623 + 2686	159	AD	†3.17a	HI1216
2.095	2359 − 022	201	B	†S0n	HI1216	2.0960	1623 + 2686	210	A	†2.80c	HI1216
2.1010	1510 + 115	207	A	†0.41a	HI1216	2.1010	1510 + 115	207	A	B1.46a	NV1239
2.1010	1510 + 115	207	A	0.15a	NV1243	2.103	0019 + 011	131	B	S0j	NV1239
2.103	0019 + 011	131	B	S0j	NV1243	2.1078	0100 + 130	35	C	B†S3k	FeII1145
2.1078	0100 + 130	35	C	B†S5k	HI1216	2.1109	1225 + 317	102	C	B†1.13e	HI1026
2.1109	1225 + 317	102	C	†0.19e	HI1216	2.1109	1225 + 317	102	C	B†0.93e	NII*1085
2.1109	1225 + 317	102	C	†S1e	OVI1032	2.1109	1225 + 317	102	C	†S2e	OVI1038
2.1109	1225 + 317	102	C	†0.26e	SiII1190	2.1109	1225 + 317	102	C	†0.29e	SiII1193
2.1203	1225 + 317	102	B	†1.06e	HI1026	2.1203	1225 + 317	102	B	B†0.99e	HI1216
2.1205	1225 + 317	102	B	†0.16e	NI1200	2.1203	1225 + 317	102	B	†S1e	OVI1032
2.1219	0307 − 195B	170	A	0.70j	HI1216	2.1228	0307 − 195A	170	A	†0.70c	HI1216
2.1228	0307 − 195A	170	A	0.32c	NV1239	2.1228	0307 − 195A	170	A	0.19c	NV1243
2.1247	0830 + 115	104	C	†1.57b	HI1216	2.1285	1037 − 270	205	A	B0.27a	SiII1260
2.1285	1037 − 270	205	A	B†1.37b	HI1216	2.1285	1037 − 270	205	A	B†1.54d	SiII1193
2.1326	1309 − 056	152	B	†1.44g	HI1216	2.1330	0316 − 203	209	B	0.41c	AlIII1855
2.1330	0316 − 203	209	B	0.45c	AlIII1863	2.1330	0316 − 203	209	B	0.41c	MgI1828
2.1330	0424 − 131	207	B	B†0.99a	HI1216	2.1330	0424 − 131	207	B	0.57a	NV1239
2.1330	0424 − 131	207	B	0.60a	NV1243	2.1361	1037 − 270	202	C	†2.23e	HI1216
2.1363	1037 − 270	205	C	B0.41a	NV1239	2.1363	1037 − 270	205	C	0.13a	NV1243
2.1363	1037 − 270	205	C	B†1.54d	SiII1190	2.138	1228 + 077	164	B	†0.83c	HI1216
2.1390	1037 − 270	205	A	0.47a	SiII1304	2.1390	1037 − 270	205	A	B†4.31b	HI1216
2.1390	1037 − 270	205	A	0.99b	SiII1260	2.1390	1037 − 270	205	A	B†2.32d	SiII1193
2.1399	1037 − 270	202	A	1.11b	SiII1260	2.1399	1037 − 270	202	A	B†2.87e	HI1216
2.1404	1037 − 270	195	AD	0.32k	AlIII1863	2.1404	1037 − 270	195	AD	B1.08l	NV1243
2.1404	1037 − 270	195	AD	1.34n	SiII1260	2.1404	1037 − 270	195	AD	B†4.55x	HI1216
2.1421	0528 − 250	204	BD	0.02a	CrII2056	2.1421	0528 − 250	204	BD	0.03a	CrII2062
2.1421	0528 − 250	204	BD	0.02a	CrII2066	2.144	0642 − 349	144	B	†S0a	HI1216
2.1455	1038 − 272	205	A	†0.60a	NV1239	2.1455	1038 − 272	205	A	B†0.19b	HI1216
2.1455	1038 − 272	205	A	†1.00b	NV1243	2.1455	1038 − 272	205	A	B†0.27b	SiII1190
2.1455	1038 − 272	205	A	B†0.40b	SiII1193	2.153	2359 − 022	201	B	†S0n	HI1216
2.1532	1309 − 056	152	B	†0.26c	NV1239	2.1563	2251 + 244	67	B	†S5n	HI1216
2.1563	2251 + 244	67	B	†S3n	SiII1260	2.159	0642 − 349	144	B	†S0a	HI1216
2.159	0642 − 349	144	B	BS0a	NV1239	2.159	0642 − 349	144	B	BS0a	NV1243
2.1615	1623 + 2689	207	B	†0.96b	HI1216	2.1635	1309 − 056	152	A	†0.54d	HI1216
2.1635	1309 − 056	152	A	0.93d	NV1243	2.1635	1309 − 056	152	A	B†2.37f	NV1239
2.1683	0002 − 422	121	A	†1.14a	HI1216	2.1693	2343 + 125	207	B	B0.48b	SiII1808
2.1714	2343 + 125	207	B	B0.68b	SiII1808	2.1730	0424 − 131	207	B	0.33a	HI1216
2.1764	0237 − 233	61	C	B†S2a	FeIII1123	2.1764	0237 − 233	61	C	BS1a	NV1239
2.1764	0237 − 233	61	C	BS2a	SII1251	2.1764	0237 − 233	61	C	†S2a	SiII1193
2.1764	0237 − 233	61	C	BS1a	SiII1260	2.1764	0237 − 233	61	C	S1a	SiII1304

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.1777	0334 − 204	209	C	0.48c	AlIII1855	2.1777	0334 − 204	209	C	B1.38c	AlIII1863
2.1777	1624 + 2685	210	B	†0.65c	HI1216	2.1801	0123 + 257	63	C	†S4e	HI1216
2.1801	0123 + 257	63	C	BS2e	OI1302	2.1803	0824 + 110	104	B	B†0.66f	HI1216
2.1803	0824 + 110	104	B	†0.22f	NV1243	2.2025	0237 − 233	152	CD	†1.01c	HI1216
2.2028	0237 − 233	207	A	†0.98a	HI1216	2.2062	0100 + 130	35	B	†S2k	HI1216
2.2062	0100 + 130	35	B	B†S1k	NII1084	2.2062	0100 + 130	35	B	B†S2k	NV1239
2.2062	0100 + 130	35	B	B†S3k	NV1243	2.2062	0100 + 130	35	B	B†S1k	OVI1032
2.2062	0100 + 130	35	B	B†S1k	OVI1038	2.211	0747 + 613	133	B	†S0n	HI1216
2.211	0747 + 613	133	B	B†S0n	NV1239	2.211	0747 + 613	133	B	†S0n	SiII1193
2.211	0747 + 613	133	B	†S0n	SiII*1265	2.2123	1246 − 057	93	A	†1.34c	HI1026
2.2123	1246 − 057	93	A	B†1.31c	HI1216	2.2168	0830 + 115	104	C	†0.78b	HI1216
2.2168	0830 + 115	104	C	B†0.78b	HI1216	2.2256	0100 + 130	35	C	†S3k	FeII1145
2.2256	0100 + 130	35	C	B†S1k	HI1026	2.2256	0100 + 130	35	C	†S3k	HI1216
2.2256	0100 + 130	35	C	B†S1k	OVI1032	2.2256	0100 + 130	35	C	B†S2k	SIII1190
2.2256	0100 + 130	35	C	B†S1k	SiII1260	2.2413	1623 + 2686	210	A	†1.86c	HI1216
2.2438	0123 + 257	63	C	B†S3d	FeII1145	2.2438	0123 + 257	63	C	B†S4d	HI1216
2.2438	0123 + 257	63	C	†S2d	OVI1032	2.2438	0123 + 257	63	C	†S2d	OVI1038
2.2438	0123 + 257	63	C	S2d	SI1296	2.2438	0123 + 257	63	C	†S3d	SII1251
2.2438	0123 + 257	63	C	BS1d	SII1260	2.247	1232 + 134	177	A	†S0n	HI1216
2.247	1232 + 134	177	A	B†S0n	NV1239	2.247	1232 + 134	177	A	B†S0n	NV1243
2.247	1232 + 134	177	A	BS0n	OI1302	2.247	1232 + 134	177	A	BS0n	SiII1304
2.2618	0249 − 184	209	C	0.52c	AlIII1855	2.2618	0249 − 184	209	C	0.33c	AlIII1863
2.2673	0123 + 257	63	C	†S3d	FeII1145	2.2673	0123 + 257	63	C	†S4d	HI1216
2.2673	0123 + 257	63	C	†S3d	NV1243	2.2673	0123 + 257	63	C	BS1d	SII1251
2.2673	0123 + 257	63	C	B†S3d	SIII1190	2.2673	0123 + 257	63	C	B†S3d	SiII1190
2.2687	0123 + 257	63	C	BS4d	CI1277	2.2687	0123 + 257	63	C	†S2d	HI1026
2.2687	0123 + 257	63	C	B†S4d	HI1216	2.2687	0123 + 257	63	C	B†S3d	NI1135
2.2687	0123 + 257	63	C	B†S3d	SiII1193	2.2760	0123 + 257	63	C	†S3d	FeII1145
2.2760	0123 + 257	63	C	†S2d	HI1026	2.2760	0123 + 257	63	C	B†S5d	HI1216
2.2760	0123 + 257	63	C	†S3d	NV1239	2.2760	0123 + 257	63	C	B†S3d	SIII1190
2.2760	0123 + 257	63	C	B†S3d	SiII1190	2.2760	0453 − 423	86	AD	†1.53e	HI1216
2.2760	0453 − 423	86	AD	B†0.89e	SiII1260	2.2760	1623 + 2685	210	C	†0.11c	HI1216
2.2765	0453 − 423	121	A	†1.28a	HI1216	2.2765	0453 − 423	121	A	†0.34a	NV1239
2.2765	0453 − 423	121	A	†0.46a	NV1243	2.2930	0123 + 257	63	C	†S2d	HI1026
2.2930	0123 + 257	63	C	†S5d	HI1216	2.3003	0123 + 257	63	C	†S2d	HI1026
2.3003	0123 + 257	63	C	B†S5d	HI1216	2.3003	0123 + 257	63	C	†S3d	NI1200
2.3003	0123 + 257	63	C	B†S2d	OVI1032	2.3018	0002 − 422	121	A	†1.79a	HI1216
2.3018	0002 − 422	121	A	†0.27a	OI1302	2.3018	0002 − 422	121	A	†0.70a	SiII1190
2.3018	0002 − 422	121	A	†0.73a	SiII1193	2.3018	0002 − 422	121	A	†0.64a	SiII1260
2.3018	0002 − 422	121	A	B†0.82a	SiII1304	2.3022	0002 − 422	206	B	0.43f	FeII2344
2.3047	1038 − 272	202	C	†0.70a	SiII1190	2.3047	1038 − 272	202	C	†0.15[illegible]	SiII1193
2.3047	1038 − 272	202	C	†0.51a	SiII*1194	2.3047	1038 − 272	202	C	†0.64b	HI1216
2.3047	1038 − 272	202	C	†0.12b	NI1200	2.3085	0100 + 130	72	B	S0f	FeII2344
2.3094	0100 + 130	77	BD	†S0a	CII1036	2.3094	0100 + 130	77	BD	†S0a	CII 977
2.3094	0100 + 130	77	BD	†S0a	CII*1037	2.3094	0100 + 130	77	BD	†S0a	CII*1336
2.3094	0100 + 130	77	BD	†S0a	CIII1176	2.3094	0100 + 130	77	BD	†S0a	FeII1143
2.3094	0100 + 130	77	BD	†S0a	HI1026	2.3094	0100 + 130	77	BD	†S0a	HI1216
2.3094	0100 + 130	77	BD	†S0a	HI 973	2.3094	0100 + 130	77	BD	†S0a	NI1134
2.3094	0100 + 130	77	BD	†S0a	NII1084	2.3094	0100 + 130	77	BD	B†S0a	NII1084
2.3094	0100 + 130	77	BD	B†S0a	NII**1086	2.3094	0100 + 130	77	BD	B†S0a	NIII 990

z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.3094	0100 + 130	77	BD	†S0a	OI1302
2.3094	0100 + 130	77	BD	†S0a	SII1251
2.3094	0100 + 130	77	BD	†S0a	SII1260
2.3094	0100 + 130	77	BD	B†S0a	SIII1190
2.3094	0100 + 130	77	BD	†S0a	SiII1021
2.3094	0100 + 130	77	BD	†S0a	OI 989
2.3094	0100 + 130	77	BD	†S0a	SII1254
2.3094	0100 + 130	77	BD	†S0a	SIII1013
2.3094	0100 + 130	77	BD	†S0a	SIV1063
2.3094	0100 + 130	77	BD	B†S0a	SiII1190
2.3094	0100 + 130	77	BD	†S0a	SiII1193
2.3094	0100 + 130	77	BD	†S0a	SiII1304
2.3094	0100 + 130	77	BD	†S0a	SiII*1024
2.310	0100 + 130	54	CD	B†S1k	H2L4R11050
2.310	0100 + 130	54	CD	B†S2k	H2L6R01024
2.3094	0100 + 130	77	BD	†S0a	SiII1260
2.3094	0100 + 130	77	BD	B†S0a	SiII 990
2.310	0100 + 130	54	CD	B†S2k	H2L3R1063
2.310	0100 + 130	54	CD	B†S2k	H2L5R11037
2.310	0100 + 130	54	CD	B†S1k	H2L7R11013
2.3105	0100 + 130	35	BD	B†S2k	CII1036
2.3105	0100 + 130	35	BD	†S5k	HI1216
2.3105	0100 + 130	35	BD	B†S2k	OI1302
2.3105	0100 + 130	35	BD	†S1k	SiII1193
2.3105	0100 + 130	35	BD	B†S3k	SiII1304
2.3105	0100 + 130	35	BD	B†S2k	HI1026
2.3105	0100 + 130	35	BD	B†S2k	NV1239
2.3105	0100 + 130	35	BD	B†S1k	SiII1190
2.3105	0100 + 130	35	BD	†S1k	SiII1260
2.3105	0100 + 130	35	BD	B†S3k	SiII1304
2.3105	0100 + 130	35	BD	B†S1k	SiII 990
2.3147	1038 − 272	202	C	†0.51a	SiII1190
2.3147	1038 − 272	202	C	†0.21b	SiII*1194
2.334	0933 + 733	133	A	†S0n	HI1216
2.334	0933 + 733	133	A	†S0n	SiII*1265
2.3147	1038 − 272	202	C	†0.60a	HI1216
2.3147	1038 − 272	202	C	†0.15a	SiII1193
2.3147	1038 − 272	202	C	†0.18c	FeII1122
2.334	0933 + 733	133	A	†S0n	SiII1260
2.3426	0123 + 257	63	C	B†S3d	FeIII1123
2.3426	0123 + 257	63	C	†S4d	HI1026
2.3426	0123 + 257	63	C	BS2d	NV1239
2.3426	0123 + 257	63	C	†S2d	OVI1038
2.3463	0123 + 257	63	C	B†S3d	HI1026
2.3463	0123 + 257	63	C	B†S5d	NI1200
2.3426	0123 + 257	63	C	B†S5d	HI1216
2.3426	0123 + 257	63	C	S1d	NV1243
2.3426	0123 + 257	63	C	S2d	SII1260
2.3463	0123 + 257	63	C	†S5d	HI1216
2.3463	0123 + 257	63	C	S1d	SII1254
2.3463	0123 + 257	63	C	B†S5d	SIII1190
2.3476	0123 + 257	63	C	†S3d	HI1026
2.3476	0123 + 257	63	C	†S3d	NI1135
2.3476	0123 + 257	63	C	S2d	SiII1260
2.3561	0142 − 100	207	A	†1.83b	HI1216
2.3463	0123 + 257	63	C	B†S[illegible]d	SiII1190
2.3476	0123 + 257	63	C	†S5d	HI1216
2.3476	0123 + 257	63	C	B†S3d	OVI1032
2.3561	0142 − 100	207	A	†0.29a	SiII1260
2.3627	0731 + 653	213	C	0.29j	NiII1742
2.3633	2251 + 244	67	A	S5m	HI1216
2.364	2251 + 244	55	BD	S0k	HI1216
2.3689	0123 + 257	63	A	S5d	HI1216
2.3689	0123 + 257	63	A	S3d	NV1243
2.3689	0123 + 257	63	A	†S4d	OVI1038
2.3633	2251 + 244	67	A	S4m	NV1239
2.3689	0123 + 257	63	A	B†S3d	HI1026
2.3689	0123 + 257	63	A	BS4d	NV1239
2.3689	0123 + 257	63	A	†S4d	OVI1032
2.3701	0123 + 257	67	B	†S2a	FeII1145
2.3701	0123 + 257	67	B	†S3a	HI1026
2.3701	0123 + 257	67	B	†S3a	NII*1085
2.3701	0123 + 257	67	B	S3a	NV1243
2.3701	0123 + 257	67	B	†S3a	OVI1038
2.3767	2239 − 386	214	B	0.22c	AlIII1863
2.3701	0123 + 257	67	B	S3a	HI1216
2.3701	0123 + 257	67	B	BS3a	NV1239
2.3701	0123 + 257	67	B	B†S5a	OVI1032
2.3767	2239 − 386	214	B	0.32c	AlIII1855
2.3960	0453 − 423	86	BD	B†0.85e	HI1216
2.3960	0453 − 423	86	BD	B†0.44e	SiII1260
2.4262	2348 − 011	213	AD	0.59i	CI1657
2.4282	2348 − 011	212	A	†1.30j	SiII1190
2.4282	2348 − 011	212	A	†1.30j	SiII1260
2.4282	2348 − 011	212	A	†1.68k	OI1302
2.3967	0453 − 423	121	B	†1.30a	HI1216
2.4262	2348 − 011	213	AD	0.60i	CI1657
2.4282	2348 − 011	212	A	†1.53j	SiII1193
2.4282	2348 − 011	212	A	†1.67k	OI1302
2.4282	2348 − 011	212	A	†1.88k	SiII1304
2.4292	0301 − 005	209	B	0.18a	AlIII1855
2.448	0642 + 449	58	B	B†S3f	SiII1260
2.465	1313 + 200	107	B	†S0k	HI1216
2.4672	0836 + 113	212	A	0.36c	SiII1304
2.4672	0836 + 113	212	A	†0.64e	SiII1190
2.448	0642 + 449	58	B	†S1f	HI1216
2.4641	0002 − 422	121	A	†1.79a	HI1216
2.4672	0836 + 113	212	A	0.58c	OI1302
2.4672	0836 + 113	212	A	†0.33d	FeII1143
2.4672	0836 + 113	212	A	B†0.84f	SiII1260

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.4672	0836 + 113	212	A	0.75h	FeII2344	2.4672	0836 + 113	212	A	†1.82h	SiII1193
2.4672	0836 + 113	212	A	0.59j	FeII2374	2.469	0836 + 113	201	B	B†S0m	HI1216
2.4720	1347 + 112	212	A	0.95c	SiII1304	2.4720	1347 + 112	212	A	1.11d	OI1302
2.4720	1347 + 112	212	A	B†1.58g	SiII1193	2.4720	1347 + 112	212	A	†1.31g	SiII1260
2.4720	1347 + 112	212	A	†1.58h	SiII1190	2.47637	0805 + 046	148	A	†0.78f	HI1026
2.47637	0805 + 046	148	A	†1.90f	HI1216	2.47637	0805 + 046	148	A	†0.72f	NII1084
2.47637	0805 + 046	148	A	†0.58f	NV1239	2.47637	0805 + 046	148	A	†0.40f	NV1243
2.47637	0805 + 046	148	A	†1.27f	OVI1032	2.47637	0805 + 046	148	A	†1.52f	OVI1038
2.47637	0805 + 046	148	A	†0.46f	SiII1190	2.47637	0805 + 046	148	A	†0.52f	SiII1193
2.47637	0805 + 046	148	A	†0.89f	SiII1260	2.47637	0805 + 046	148	A	†1.35f	SiII1304
2.4787	0207 − 398	111	A	†1.15i	SiII1260	2.492	0642 + 449	58	C	B†S3f	HI1216
2.492	0642 + 449	58	C	†S1f	NV1239	2.492	0642 + 449	58	C	†S4f	NV1243
2.492	0642 + 449	58	C	†S3f	SiII1260	2.507	0933 + 733	133	A	S0m	AlIII1855
2.507	0933 + 733	133	A	S0m	AlIII1863	2.507	0933 + 733	133	A	†S0m	HI1216
2.507	0933 + 733	133	A	S0m	NV1239	2.507	0933 + 733	133	A	S0m	SiII1260
2.5229	1213 + 093	207	A	†0.23a	NV1239	2.5229	1213 + 093	207	A	†0.87b	SiII1260
2.5229	1213 + 093	207	A	†4.63d	HI1216	2.5287	1623 + 2689	207	B	†0.27a	HI1026
2.5287	1623 + 2689	207	B	†0.44a	HI1216	2.5287	1623 + 2689	207	B	†0.15a	HI 973
2.5287	1623 + 2689	207	B	†0.11a	OVI1038	2.5287	1623 + 2689	207	B	†0.24a	SiII1190
2.5432	0100 + 130	35	C	B†S3k	HI1026	2.5432	0100 + 130	35	C	B†S3k	HI1216
2.5432	0100 + 130	35	C	B†S2k	HI 973	2.5432	0100 + 130	35	C	B†S2k	NII1084
2.5432	0100 + 130	35	C	†S0k	NV1239	2.5511	0100 + 130	35	C	B†S1k	FeII1145
2.5511	0100 + 130	35	C	B†S3k	FeIII1123	2.5511	0100 + 130	35	C	†S1k	HI1026
2.5511	0100 + 130	35	C	B†S3k	HI1216	2.5511	0100 + 130	35	C	B†S3k	HI1216
2.5511	0100 + 130	35	C	†S1k	SiII1193	2.6172	2348 − 011	212	A	†0.25d	CII*1336
2.6172	2348 − 011	212	A	†0.40f	FeII1143	2.6172	2348 − 011	212	A	†0.36f	SiII1190
2.6172	2348 − 011	212	A	†5.71g	SiII1193	2.6172	2348 − 011	212	A	†0.64j	FeII1122
2.6172	2348 − 011	212	A	†0.96j	OI1302	2.6172	2348 − 011	212	A	†2.94k	SiII1260
2.6194	0100 + 130	77	C	†S0a	ArI1048	2.6194	0100 + 130	77	C	†S0a	ArI1067
2.6194	0100 + 130	77	C	†S0a	CII1036	2.6194	0100 + 130	77	C	†S0a	CII 977
2.6194	0100 + 130	77	C	†S0a	HI1026	2.6194	0100 + 130	77	C	†S0a	HI1216
2.6194	0100 + 130	77	C	†S0a	HI 973	2.6194	0100 + 130	77	C	†S0a	NI1134
2.6194	0100 + 130	77	C	†S0a	NII1084	2.6194	0100 + 130	77	C	†S0a	NII 915
2.6194	0100 + 130	77	C	B†S0a	NIII 990	2.6194	0100 + 130	77	C	†S0a	OI 989
2.6194	0100 + 130	77	C	†S0a	OVI1032	2.6194	0100 + 130	77	C	†S0a	OVI1038
2.6194	0100 + 130	77	C	†S0a	SiII1021	2.6194	0100 + 130	77	C	†S0a	SiII1190
2.6194	0100 + 130	77	C	†S0a	SiII1193	2.6194	0100 + 130	77	C	S0a	SiII1260
2.6194	0100 + 130	77	C	B†S0a	SiII 990	2.6217	1347 + 112	212	A	0.64d	SiII1260
2.6217	1347 + 112	212	A	†0.51f	SiII1190	2.6217	1347 + 112	212	A	†1.78g	HI1216
2.6217	1347 + 112	212	A	†0.69h	SiII1193	2.6336	1442 + 101	207	B	0.11a	AlIII1855
2.6381	2126 − 158	118	AD	†0.69a	CII*1336	2.6381	2126 − 158	118	AD	†2.36a	HI1216
2.6381	2126 − 158	118	AD	†0.33a	OI1302	2.6381	2126 − 158	118	AD	†0.55a	SiII1190
2.6381	2126 − 158	118	AD	†1.35a	SiII1193	2.6381	2126 − 158	118	AD	†0.44a	SiII1304
2.6385	2126 − 158	206	CD	0.22b	AlIII1855	2.6385	2126 − 158	206	CD	0.24c	AlIII1863
2.6387	2126 − 158	185	BD	0.30e	AlIII1855	2.6387	2126 − 158	185	BD	0.22e	AlIII1863
2.6447	2351 − 154	104	B	B†0.11b	HI1216	2.6447	2351 − 154	104	B	0.08b	NV1239
2.6447	2351 − 154	104	B	0.05b	NV1243	2.6631	0100 + 130	35	C	†S3k	CII 977
2.6631	0100 + 130	35	C	†S2k	HI1026	2.6631	0100 + 130	35	C	†S5k	HI1216
2.6631	0100 + 130	35	C	†S5k	HI1216	2.6631	0100 + 130	35	C	B†S3k	HI 973
2.6631	0100 + 130	35	C	B†S1k	NII 915	2.6631	0100 + 130	35	C	B†S2k	NII*1085

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.6631	0100 + 130	35	C	B†S5k	OVI1032	2.6631	0100 + 130	35	C	B†S3k	SIII1190
2.6631	0100 + 130	77	CD	†S0a	ArI1048	2.6631	0100 + 130	77	CD	†S0a	CII1036
2.6631	0100 + 130	77	CD	†S0a	CII 977	2.6631	0100 + 130	77	CD	†S0a	CIII1176
2.6631	0100 + 130	77	CD	†S0a	HI1026	2.6631	0100 + 130	77	CD	†S0a	HI1216
2.6631	0100 + 130	77	CD	†S0a	HI 973	2.6631	0100 + 130	77	CD	†S0a	NI1134
2.6631	0100 + 130	77	CD	†S0a	NI1200	2.6631	0100 + 130	77	CD	†S0a	NII1084
2.6631	0100 + 130	77	CD	†S0a	NII 915	2.6631	0100 + 130	77	CD	†S0a	OVI1032
2.6631	0100 + 130	77	CD	†S0a	OVI1038	2.6631	0100 + 130	77	CD	†S0a	SiII1190
2.6631	0100 + 130	77	CD	†S0a	SiII1193	2.6702	1511 + 091	207	A	†0.25a	SiII1193
2.6702	1511 + 091	207	A	†1.02b	HI1216	2.6775	2351 − 154	104	A	0.76b	HI1216
2.6775	2351 − 154	104	A	B0.22b	NV1239	2.7664	0830 + 115	104	C	B†0.66b	CII 977
2.7664	0830 + 115	104	C	†0.37b	HI1216	2.7664	0830 + 115	104	C	†0.53b	OVI1032
2.7664	0830 + 115	104	C	B†0.66b	OVI1038	2.7685	2126 − 158	118	AD	†0.48a	CII*1336
2.7685	2126 − 158	118	AD	†0.32a	FeII1145	2.7685	2126 − 158	118	AD	†2.49a	HI1216
2.7685	2126 − 158	118	AD	†0.48a	OI1302	2.7685	2126 − 158	118	AD	†0.40a	SiII1190
2.7685	2126 − 158	118	AD	†0.61a	SiII1193	2.7685	2126 − 158	118	AD	†1.09a	SiII1260
2.7685	2126 − 158	118	AD	†0.61a	SiII1304	2.7686	2126 − 158	207	A	†0.51b	OI1302
2.7686	2126 − 158	207	A	†0.71b	SiII1304	2.7820	0400 − 271	209	B	2.52e	NV1243
2.7968	1337 + 113	212	A	0.21a	SiII1260	2.7968	1337 + 113	212	A	†0.17b	SiII1193
2.7968	1337 + 113	212	A	0.18b	SiII1304	2.7968	1337 + 113	212	A	†0.27c	SiII1190
2.7968	1337 + 113	212	A	0.28d	OI1302	2.8004	0014 + 813	207	A	†0.21b	SiII1304
2.8064	0324 − 407	111	B	†3.15h	HI1216	2.8086	0014 + 813	207	C	†0.89b	SiII1260
2.8086	0014 + 813	207	C	†0.21b	SiII1304	2.8112	0528 − 250	204	AD	0.04a	NiII1710
2.8112	0528 − 250	204	AD	0.05a	NiII1742	2.8116	0528 − 250	187	BD	†0.13a	H2L0P1110
2.8116	0528 − 250	187	BD	†0.29a	H2L0R1109	2.8116	0528 − 250	187	BD	†0.33a	H2L1P1094
2.8116	0528 − 250	187	BD	†0.40a	H2L1R1093	2.8116	0528 − 250	187	BD	†0.55a	H2L2R1078
2.8116	0528 − 250	187	BD	†0.44a	H2L2R1079	2.8116	0528 − 250	187	BD	†0.42a	H2L3P1065
2.8116	0528 − 250	187	BD	†0.47a	H2L4R11050	2.8116	0528 − 250	187	BD	†0.62a	H2W0Q31013
2.8116	0528 − 250	207	A	1.18b	SiII1260	2.8145	0528 − 250	207	B	1.16b	SiII1260
2.8389	1511 + 091	207	A	B†0.88b	HI1216	2.8389	1511 + 091	207	A	†0.26b	SiII1190
2.8470	1511 + 091	207	A	†0.19a	HI1216	2.8470	1511 + 091	207	A	B†0.37b	SiII1190
2.8487	0347 − 383	214	B	0.13b	AlIII1855	2.8487	0347 − 383	214	B	0.25b	AlIII1863
2.8530	1511 + 091	207	A	†0.39b	HI1216	2.8530	1511 + 091	207	A	B0.53b	NV1239
2.8635	1511 + 091	207	A	0.93a	NV1243	2.8635	1511 + 091	207	A	†1.48b	HI1216
2.8635	1511 + 091	207	A	1.75b	NV1239	2.8635	1511 + 091	207	A	†0.57b	SiII1190
2.8705	0004 + 171	209	C	0.16b	OI1302	2.8705	0004 + 171	209	C	0.28b	SiII1260
2.87797	0805 + 046	148	A	†1.44e	FeII1145	2.87797	0805 + 046	148	A	†0.39e	FeIII1123
2.87797	0805 + 046	148	A	†0.36e	HI1026	2.87797	0805 + 046	148	A	†0.72e	HI1216
2.87797	0805 + 046	148	A	†0.67e	HI 950	2.87797	0805 + 046	148	A	†0.54e	HI 973
2.87797	0805 + 046	148	A	0.23e	NV1239	2.87797	0805 + 046	148	A	0.21e	NV1243
2.87797	0805 + 046	148	A	†1.73e	OVI1032	2.87797	0805 + 046	148	A	†1.32e	OVI1038
2.87797	0805 + 046	148	A	†0.46e	SIII1013	2.87797	0805 + 046	148	A	†0.49e	SiII1190
2.87797	0805 + 046	148	A	†0.52e	SiII1193	2.87797	0805 + 046	148	A	0.21e	SiII1260
2.8853	1511 + 091	207	A	0.51a	NV1239	2.8853	1511 + 091	207	A	0.41a	NV1243
2.9073	2126 − 158	213	A	0.14a	SI1425	2.9099	0731 + 653	209	B	0.67b	SiII1260
2.912	0642 + 449	58	B	B†S0e	ArI1048	2.912	0642 + 449	58	B	B†S4e	HI1026
2.912	0642 + 449	58	B	B†S4e	HI1216	2.912	0642 + 449	58	B	B†S3e	NI1200
2.912	0642 + 449	58	B	B†S3e	NII1084	2.912	0642 + 449	58	B	†S3e	NV1239
2.912	0642 + 449	58	B	B†S5e	NV1243	2.912	0642 + 449	58	B	†S3e	OI1302
2.912	0642 + 449	58	B	B†S5e	OVI1032	2.912	0642 + 449	58	B	†S0e	OVI1038

z_{abs}	QSO	Ref	GD	EqW	Line(rest)	z_{abs}	QSO	Ref	GD	EqW	Line(rest)
2.912	0642 + 449	58	B	†S4e	SiII1190	2.912	0642 + 449	58	B	B†S3e	SiII1193
2.912	0642 + 449	58	B	B†S4e	SiII1304	2.9277	0102 − 190	209	B	0.52c	SiII1260
2.9326	0324 − 407	111	B	†2.80g	HI1216	2.972	0642 + 449	58	CD	B†S4e	HI1026
2.972	0642 + 449	58	CD	†S4e	HI1216	2.972	0642 + 449	58	CD	B†S0e	OVI1032
2.972	0642 + 449	58	CD	B†S3e	OVI1038	2.9773	0537 − 286	105	A	†S0n	HI1026
2.9773	0537 − 286	105	A	†S0n	HI1216	2.9773	0537 − 286	105	A	†S0n	HI 938
2.9773	0537 − 286	105	A	†S0n	HI 950	2.9773	0537 − 286	105	A	†S0n	HI 973
2.9773	0537 − 286	105	A	†S0n	OVI1032	2.9773	0537 − 286	105	A	†S0n	OVI1038
2.980	1602 + 178	189	B	†S0m	HI1216	3.0252	0347 − 383	214	A	†0.72b	SiII1260
3.0525	0449 − 135	207	BD	1.80a	NV1243	3.0525	0449 − 135	207	BD	†0.82b	HI1216
3.0525	0449 − 135	207	BD	1.89b	NV1239	3.0547	0449 − 135	209	B	2.27c	NV1239
3.0547	0449 − 135	209	B	2.34c	NV1243	3.0972	0537 − 286	105	C	†S0n	HI1216
3.0972	0537 − 286	105	C	†S0n	NII*1085	3.123	0642 + 449	58	BD	B†S3e	HI1026
3.123	0642 + 449	58	BD	†S5e	HI1216	3.123	0642 + 449	58	BD	B†S4e	HI 973
3.123	0642 + 449	58	BD	B†S4e	NV1239	3.123	0642 + 449	58	BD	†S0e	NV1243
3.123	0642 + 449	58	BD	†S3e	OVI1032	3.123	0642 + 449	58	BD	†S0e	SiII1260
3.1360	0101 − 304	209	B	0.25b	SiII1260	3.1430	0837 + 109	207	B	†0.73a	HI1216
3.1588	2204 − 408	214	B	0.18a	SiII1260	3.1726	2000 − 330	214	A	†0.70c	SiII1260
3.1881	2000 − 330	197	C	†0.09b	SiII1260	3.1914	2000 − 330	214	A	†0.91c	SiII1260
3.1914	2000 − 330	214	A	†0.28e	SiII1193	3.192	0642 + 449	58	C	B†S3e	CII1036
3.192	0642 + 449	58	C	B†S3e	HI1026	3.192	0642 + 449	58	C	†S3e	HI1216
3.192	0642 + 449	58	C	B†S4e	HI 973	3.192	0642 + 449	58	C	B†S4e	NI1135
3.192	0642 + 449	58	C	†S5e	NI1200	3.192	0642 + 449	58	C	B†S5e	SiII1260
3.218	1601 + 182	189	B	†S0l	HI1216	3.2258	1159 + 123	207	C	†0.86c	HI1216
3.2266	0014 + 813	207	A	†0.48b	HI1216	3.2374	0042 − 264	214	B	†1.21d	HI1216
3.247	0642 + 449	58	CD	†S4d	HI1026	3.247	0642 + 449	58	CD	†S5d	HI1216
3.247	0642 + 449	58	CD	B†S0d	HI 938	3.247	0642 + 449	58	CD	B†S5d	HI 950
3.247	0642 + 449	58	CD	†S3d	HI 973	3.2613	1159 + 123	207	C	†1.15c	HI1216
3.2921	0042 − 264	214	B	†0.68b	HI1216	3.3334	2000 − 330	214	A	†0.18a	SiII1260
3.3334	2000 − 330	214	A	†1.14e	HI1216	3.3375	2000 − 330	214	B	†0.28b	HI1216
3.373	2227 − 394	81	A	†S0l	HI1216	3.3897	0000 − 263	214	A	B†0.45a	OI1302
3.3897	0000 − 263	214	A	†0.40a	SiII1304	3.3897	0000 − 263	214	A	†0.28b	SiII1193
3.3897	0000 − 263	214	A	†1.74b	SiII1260	3.5263	1159 + 123	207	A	1.30a	HI1216
3.5263	1159 + 123	207	A	0.19a	NV1239	3.5263	1159 + 123	207	A	0.13a	NV1243
3.5263	1159 + 123	207	A	†0.71a	OVI1032	3.5263	1159 + 123	207	A	†0.55a	OVI1038
3.5263	1159 + 123	207	A	†0.69b	FeII1143	3.5263	1159 + 123	207	A	†1.19b	HI1026
3.5363	0000 − 263	214	C	B†0.43a	SiII1260	3.5523	2000 − 330	214	B	†0.54a	SiII1260
3.5523	2000 − 330	214	B	†1.87j	HI1216	3.5575	2000 − 330	214	B	†0.11a	SiII1260
3.5575	2000 − 330	214	B	†0.66b	HI1216	3.5800	0054 − 284	209	B	0.98b	SiII1260
3.6013	0055 − 269	214	B	B†1.18b	HI1216	4.1324	0000 − 263	214	A	1.40b	HI1216