APPENDIX A: SPECTRA, EQUIVALENT WIDTHS, AND COLUMN DENSITIES

Figure A1 shows the normalized line profiles for Ti II (λ3383), Ca II (λ3933), and Na I (λ3302 or λ5895) or K I (λ7698) toward the Galactic targets. As described in the text, the Galactic spectra were obtained from different sources, at different resolutions; the source of each spectrum is indicated by the letter code at the far right, just above the continuum. Most of the higher resolution (FWHM $\lesssim$ 2 km s^{-1}) Na I, K I, and Ca II spectra are from Welty et al. (1994, 1996), Welty & Hobbs (2001), or Welty, Snow, & Morton (in prep.). The few exceptions are the Ti II spectrum for ζ Per (Hobbs 1979), the Ca II and K I spectra for HD 110432 (generated from component structures reported by Crawford 1995), and the K I spectrum for HD 183143 (McCall et al. 2002). The tick marks above the spectra indicate the locations of individual components identified in detailed fits to the higher resolution line profiles. Solid dots above the Na I or K I tick marks indicate components detected in CN absorption. Some of the CN velocities were determined from fits to the CN lines near 3579 and/or 3875 Å in the UVES spectra discussed in this paper or in unpublished higher resolution spectra obtained with the Kitt Peak coudé feed; the rest were taken from other published studies (Gredel, van Dishoeck, & Black 1991; Welty & Fowler 1992; Crawford et al. 1994; Crawford 1995; McCall et al. 2002). Note the differences in total velocity interval for the Galactic sight lines; the vertical dotted lines are separated by 10 km s^{-1} in each case. Note also the expanded vertical scales for the weaker absorption features.

Figure A2 shows the spectra of the SMC and LMC targets, with the Ti II profile offest by 0.2 above the Ca II profile and the Na I λ3302 profile offset by 0.2 above the Na I λ5895 profile in each case; all profiles are on the same (unexpanded) vertical scale. The Ti II spectra from runs V02 and V04 have been smoothed by summing adjacent pixels, to obtain more nearly optimal sampling for those lower resolution spectra. Stellar absorption from S II and Ca II is indicated by the dotted lines superposed on several of the Ca II profiles. For a number of the LMC sight lines, the LMC Na I λ5889 (D2) absorption, at about -303 km s^{-1} relative to the λ5895 (D1) absorption, is blended with the Galactic D1 absorption near $v \sim 0$ km s^{-1}.

Table A1 lists the component structures (heliocentric velocities, b-values, and column densities) for Galactic sight lines for which high-resolution (FWHM $\lesssim$ 2 km s^{-1}) Ca II spectra are available (e.g., Welty et al. 1996; Price et al. 2001; Pan et al. 2004). Fits to the Ca II profiles determined the number of components, the relative component velocities, and the b-values (in nearly all cases); fits to the Ti II profiles then determined the component column densities and an overall velocity offset. Values for b given in square braces were fixed in the fits, but are fairly well determined; values in parentheses were also fixed, but are less well determined. The last column gives the column density ratio Ti II/Ca II for each component.

Table A2 lists 314 Galactic sight lines for which Ti II data (λ3383 equivalent widths and/or column density estimates) are available. While this table provides a more extensive compilation than the similar table in Jenkins (2009), only the values deemed "reliable" (based on considerations of resolution, S/N ratio, and/or listed uncertainty) have been used in the various correlations discussed in the text. The 1-σ uncertainties on the equivalent widths are those listed in the original references, but they were not all calculated in the same way (some include both photon noise and continuum uncertainties, others just photon noise). There appears to be even less uniformity in the published upper limits; we have adjusted the limits in Albert et al. (1993) and Hobbs (1984) by a factor of 1.5 and the limit for κ Vel in Dunkin & Crawford (1999) by a factor of 3 in an attempt to make all the limits (roughly) 3-σ. Even so, comparisons with detections of other species (e.g., Ca II) may be complicated by differences in velocity extent between the detections and the limits (which in most cases refer to a single unresolved component). Where the original reference did not list uncertainties (denoted by ±x.x for the equivalent widths and/or by ±0.xx for the column densities), we have assumed a typical value of 0.07 dex; for the correlations, we have assumed a minimum uncertainty of 10 per cent for N(Ti II).

In most cases, the equivalent widths for a given sight line from different references agree within the mutual uncertainties. Some of the disagreements are likely due to differences in continuum fitting (especially for weak absorption spread over a broad velocity range) and/or in the treatment of blends with stellar Ti II absorption features (for stellar types later than about B5); temporal variations might be responsible in a few cases (e.g., toward disturbed regions such as the Vela supernova remnant). Two estimates for the total sight line Ti II column density are listed. The first estimate was obtained either directly from the equivalent width (values in parentheses) or by integrating the "apparent" optical depth (AOD) over the line profile – in either case yielding a firm lower limit to N(Ti II). The second estimate was obtained via a detailed multi-component fit to the line profile, which (in principle) can account for any saturation effects (if the b-values are well determined). In most cases, the values from the detailed fits are not more than 0.1 dex larger than those estimated from the equivalent widths or AOD integrations – suggesting that saturation effects are generally fairly small for the Ti II λ3383 line. All column densities from other references have been adjusted for any differences from the f-value adopted here (0.358; Morton 2003).

Table A3 lists selected column density data for 79 QSO absorption-line systems for which Ti II column densities (or upper limits) are available. The last three entries are for the averages of 27, 13, and 14 Ca II-selected systems seen in lower resolution, lower S/N spectra from the Sloan Digital Sky Survey (Wild et al. 2006). Most of the column densities have been derived from moderate-resolution spectra (FWHM $\sim$ 5–8 km s^{-1}) obtained with Keck/HIRES, VLT/UVES, or Magellan/MIKE within the past decade. In all cases, the column densities are for the entire system (regardless of the potentially different velocity extents covered by the lines measured for the various species); differences in velocity extent are likely an issue for the listed upper limits as well. The relative abundances [Zn/H] and [Ti/Zn] are with reference to the adopted solar abundances (Ti/H = -7.08 dex; Zn/H = -7.37 dex; Lodders 2003). Significant amounts of ionized gas may well be present for the systems with N(H I) $\lesssim 3 \times 10^{19}$ cm^{-2}.

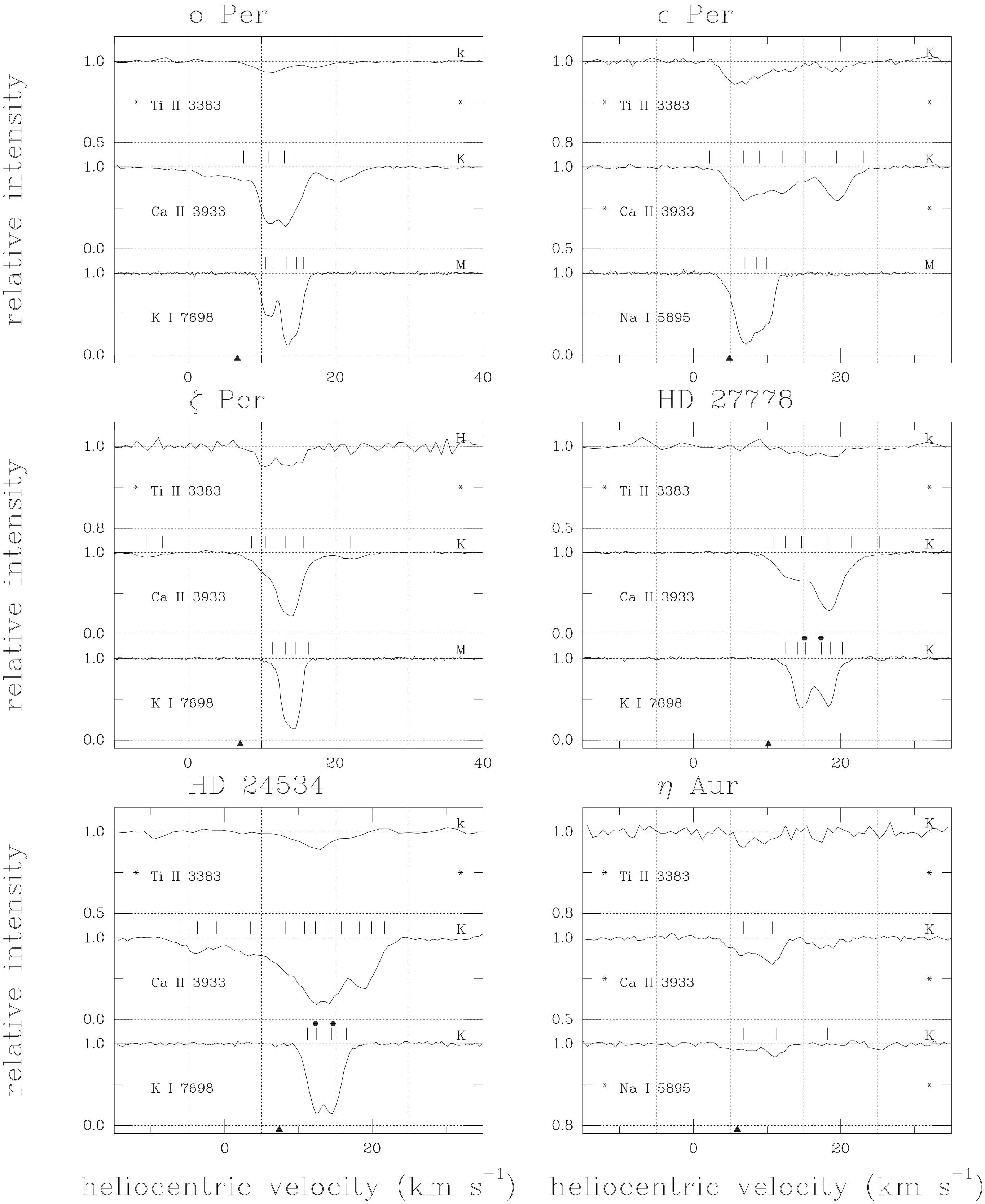

Figure A1. The interstellar Ti II, Ca II, and K I or Na I profiles toward the Galactic targets. The source of the spectra has been noted at the right, just above the continuum [A,c = AAT UHRF (FWHM = 0.3–0.4 km s^{-1}; E = ESO 3.6m/CES (FWHM = 1.2–2.0 km s^{-1}); H = McDonald 2.7m coudé (FWHM = 1.4 km s^{-1}); K = KPNO coudé feed (FWHM = 1.2–1.5 km s^{-1}); k = KPNO coudé feed (FWHM = 2.9–3.6 km s^{-1}); M = McDonald 2.7m coudé (FWHM = 0.5–0.6 km s^{-1}); m = McDonald 2.7m coudé (FWHM = 1.8 km s^{-1}); V = VLT/UVES (FWHM = 3.8–8.7 km s^{-1})]. Tick marks above the spectra indicate the components found in fitting the profiles; solid dots indicate components detected in CN. Solid triangles at bottom of each plot indicate zero point for LSR velocities.

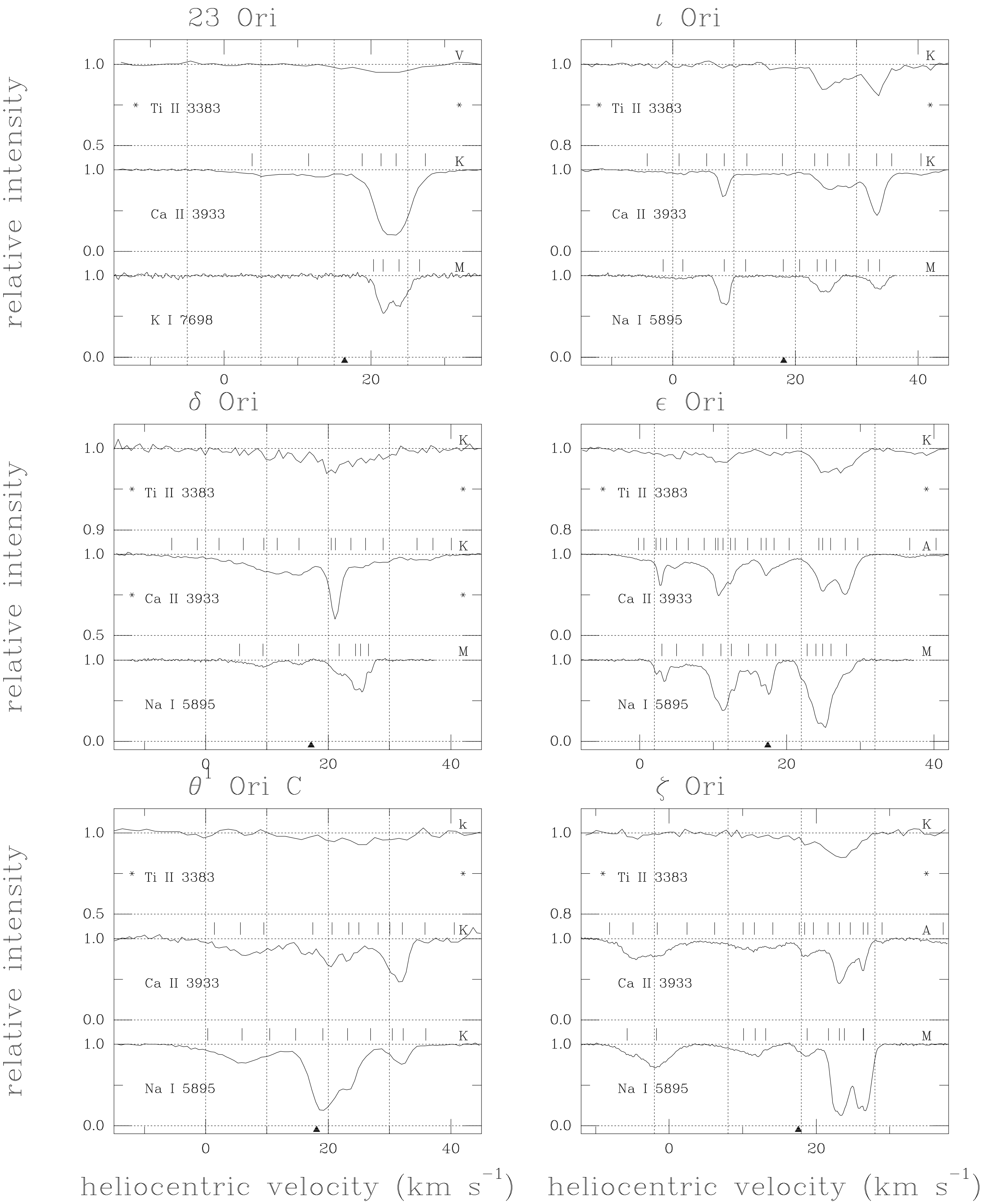

Figure A1 – *continued*

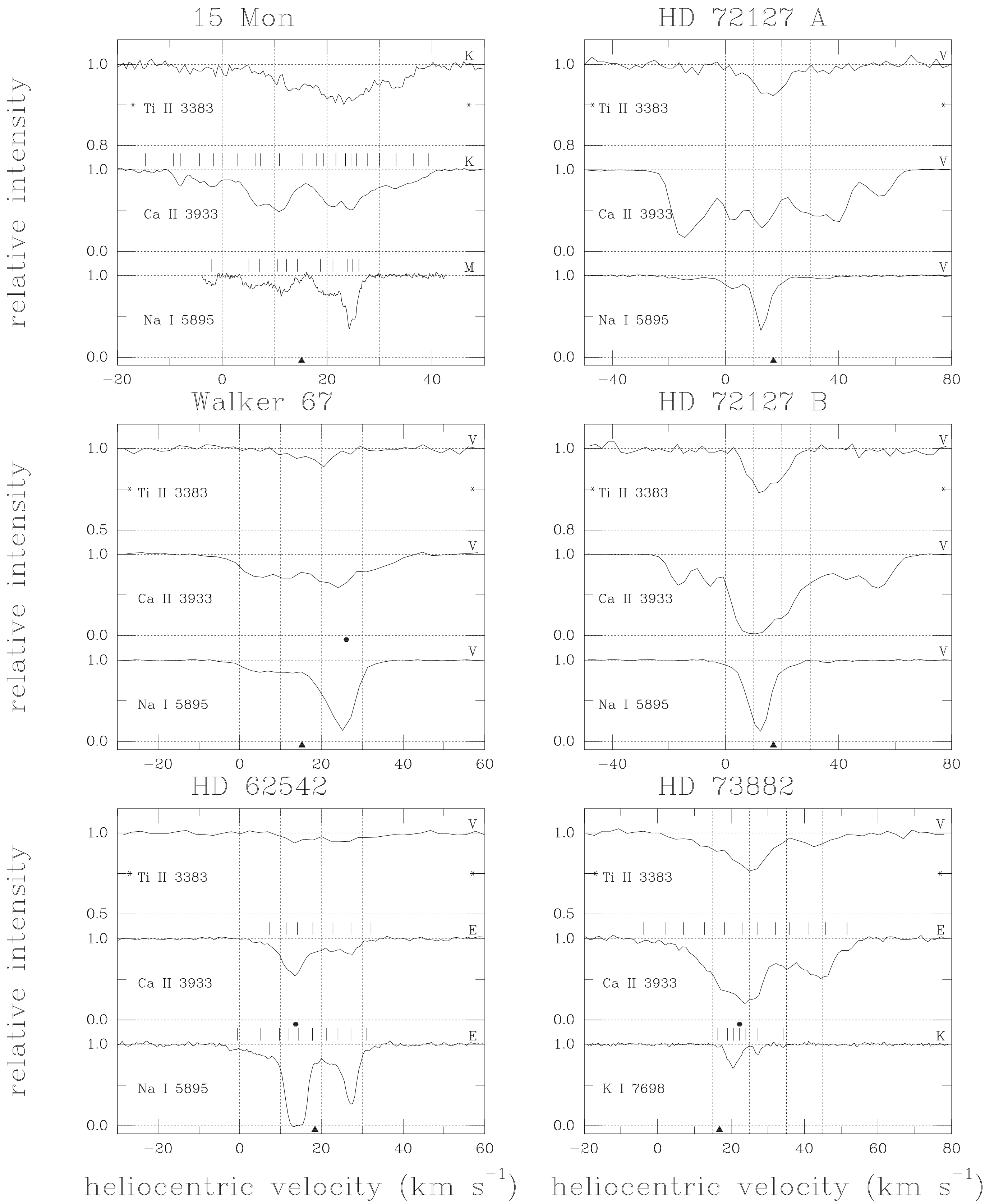

Figure A1 – *continued*

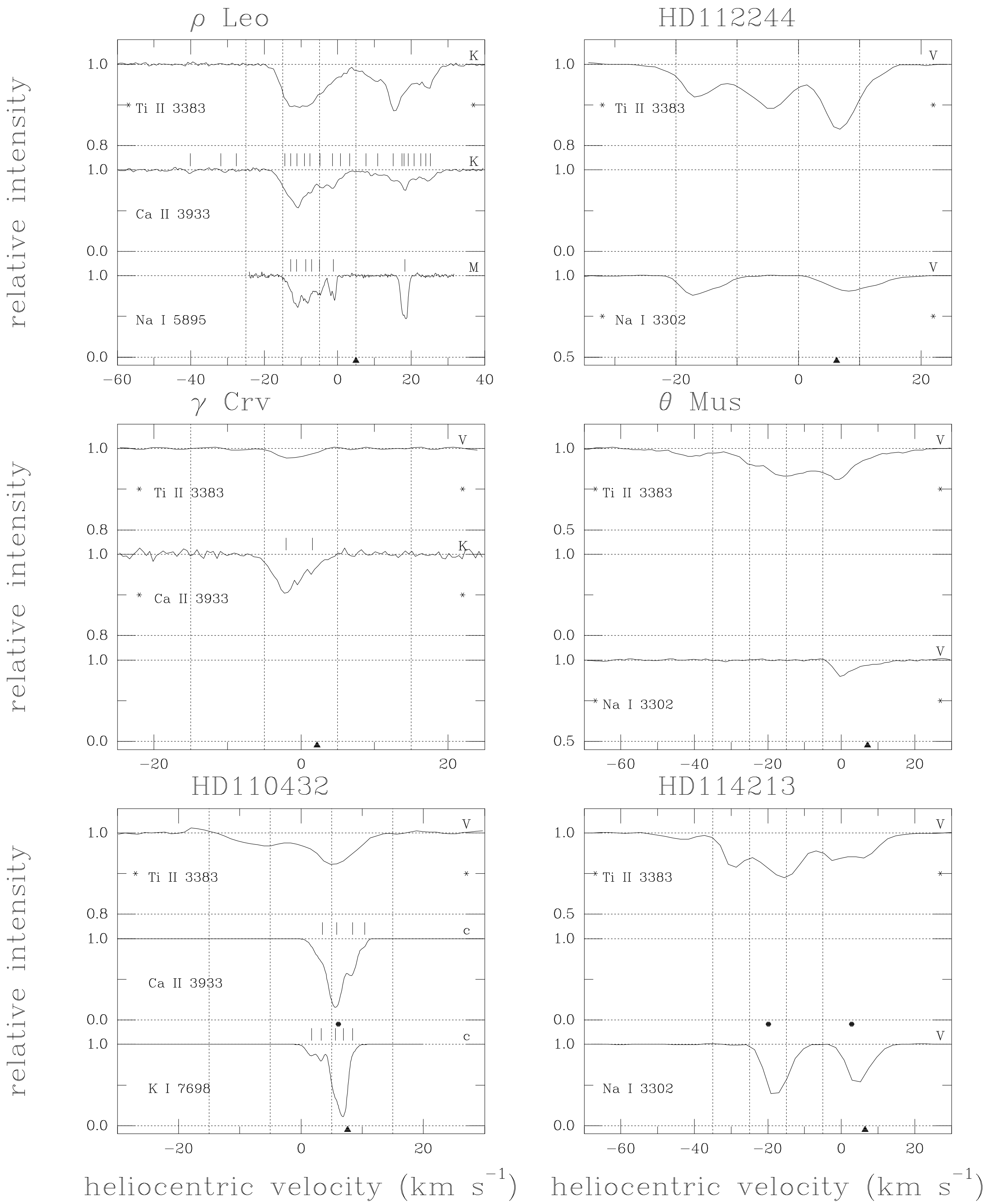

Figure A1 – *continued*

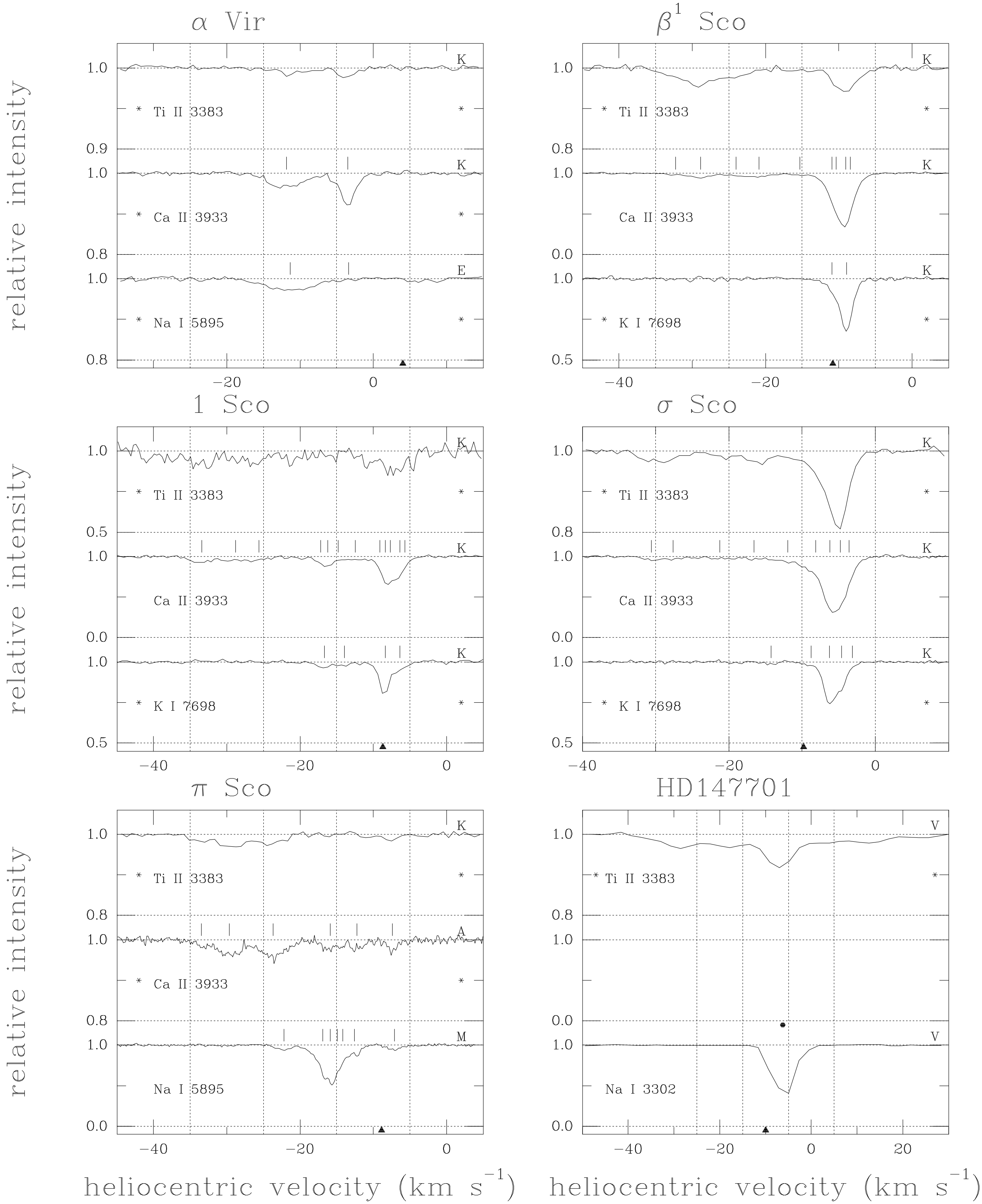

Figure A1 – *continued*

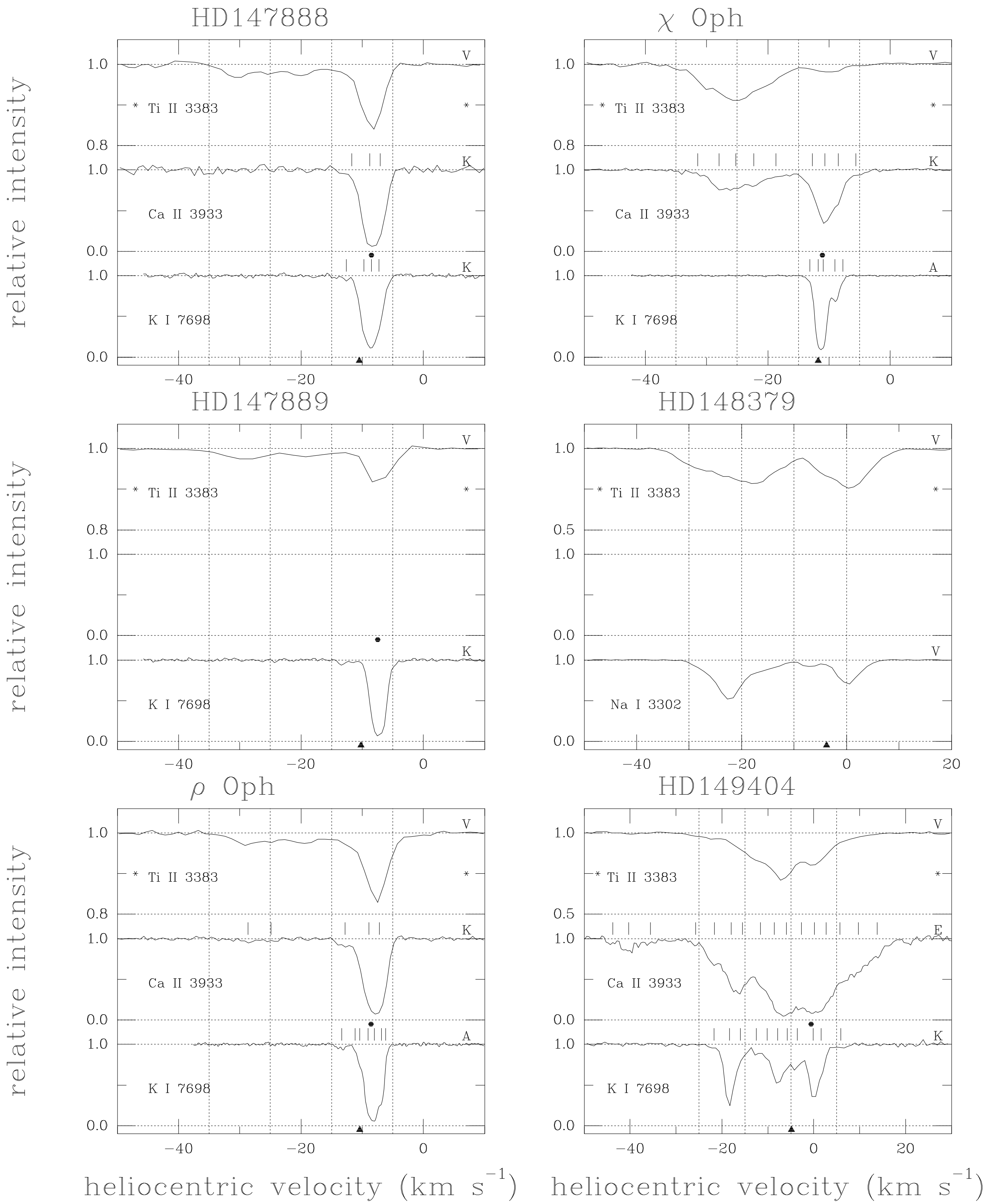

Figure A1 – *continued*

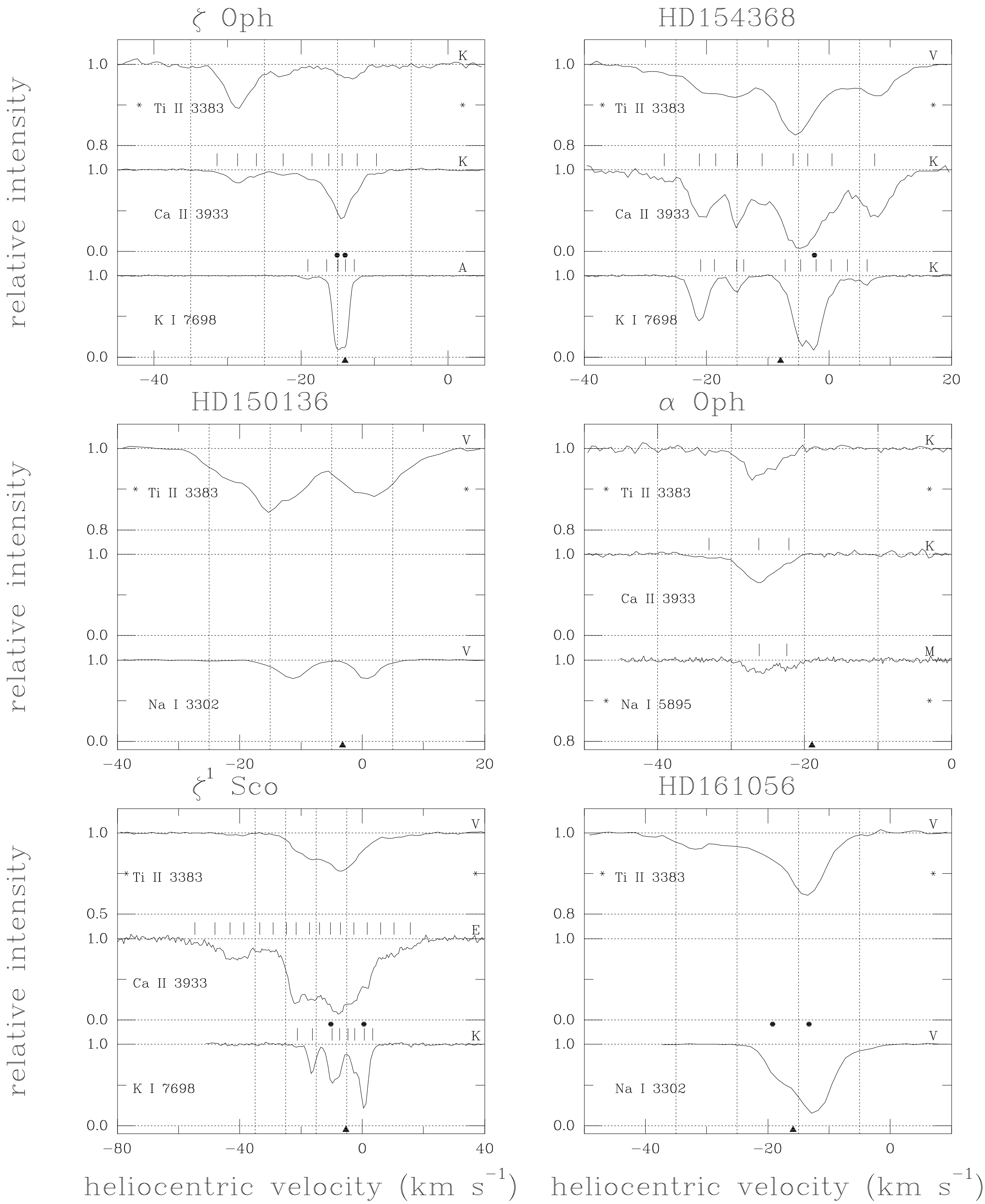

Figure A1 – *continued*

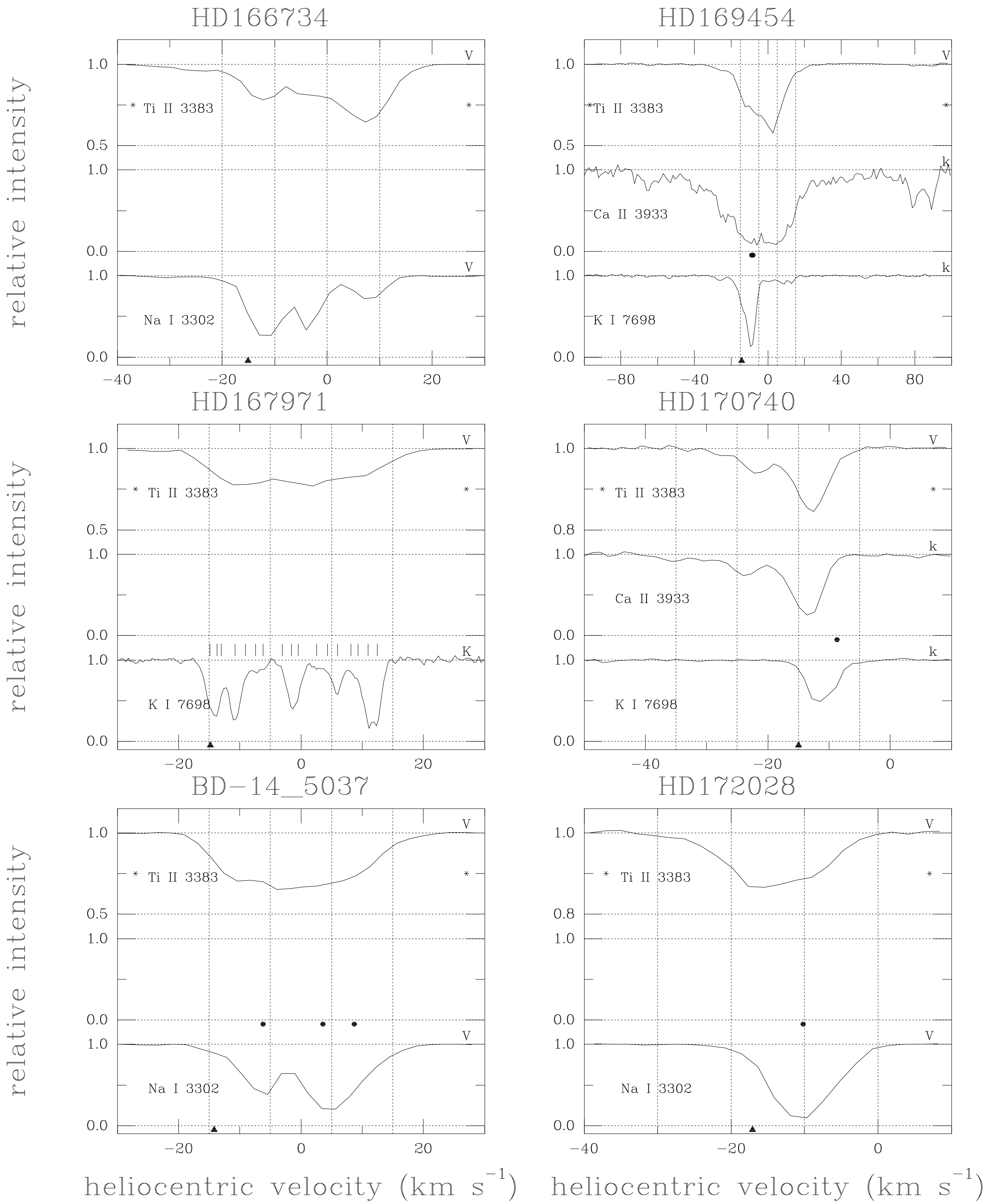

Figure A1 – *continued*

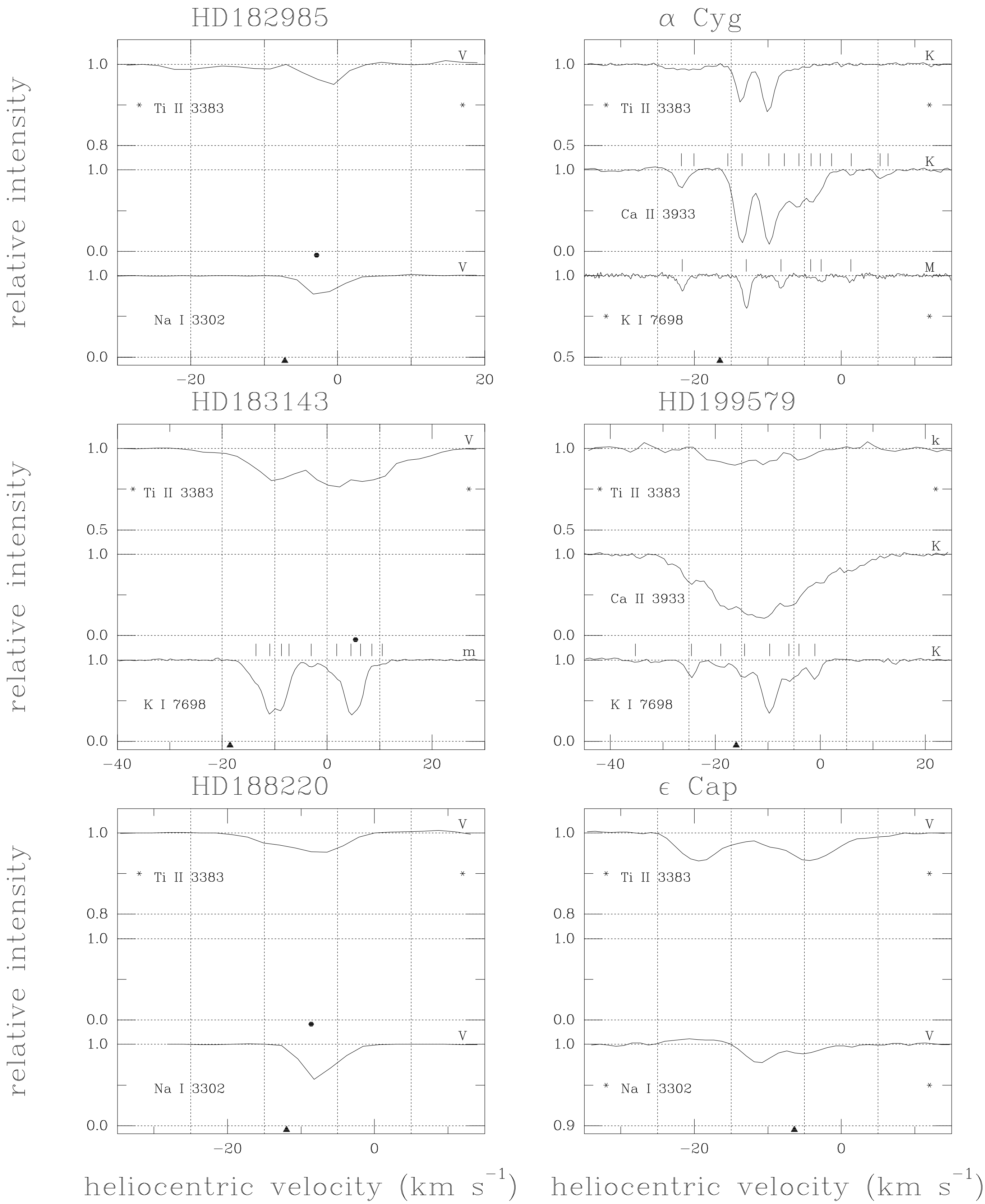

Figure A1 – *continued*

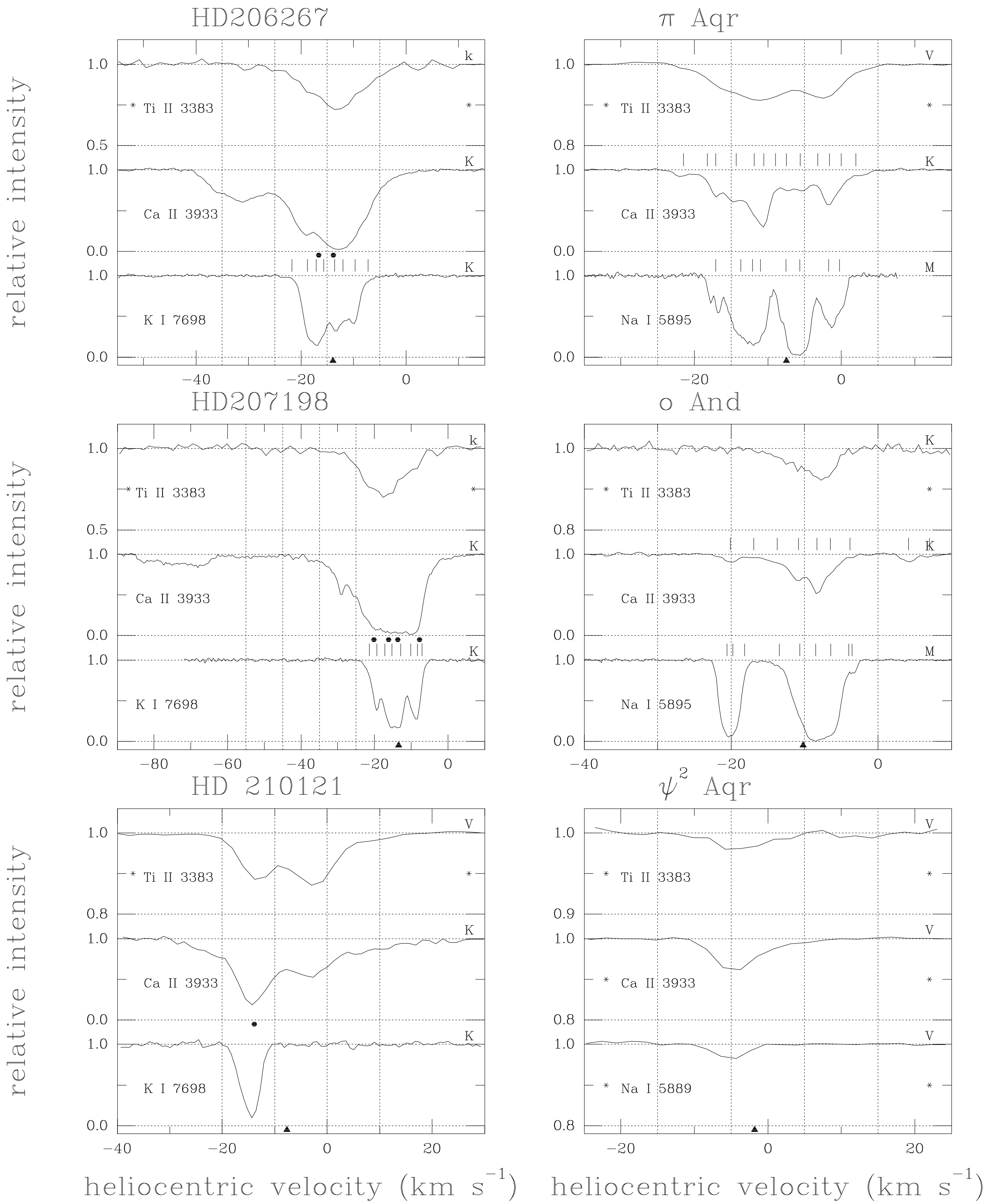

Figure A1 – *continued*

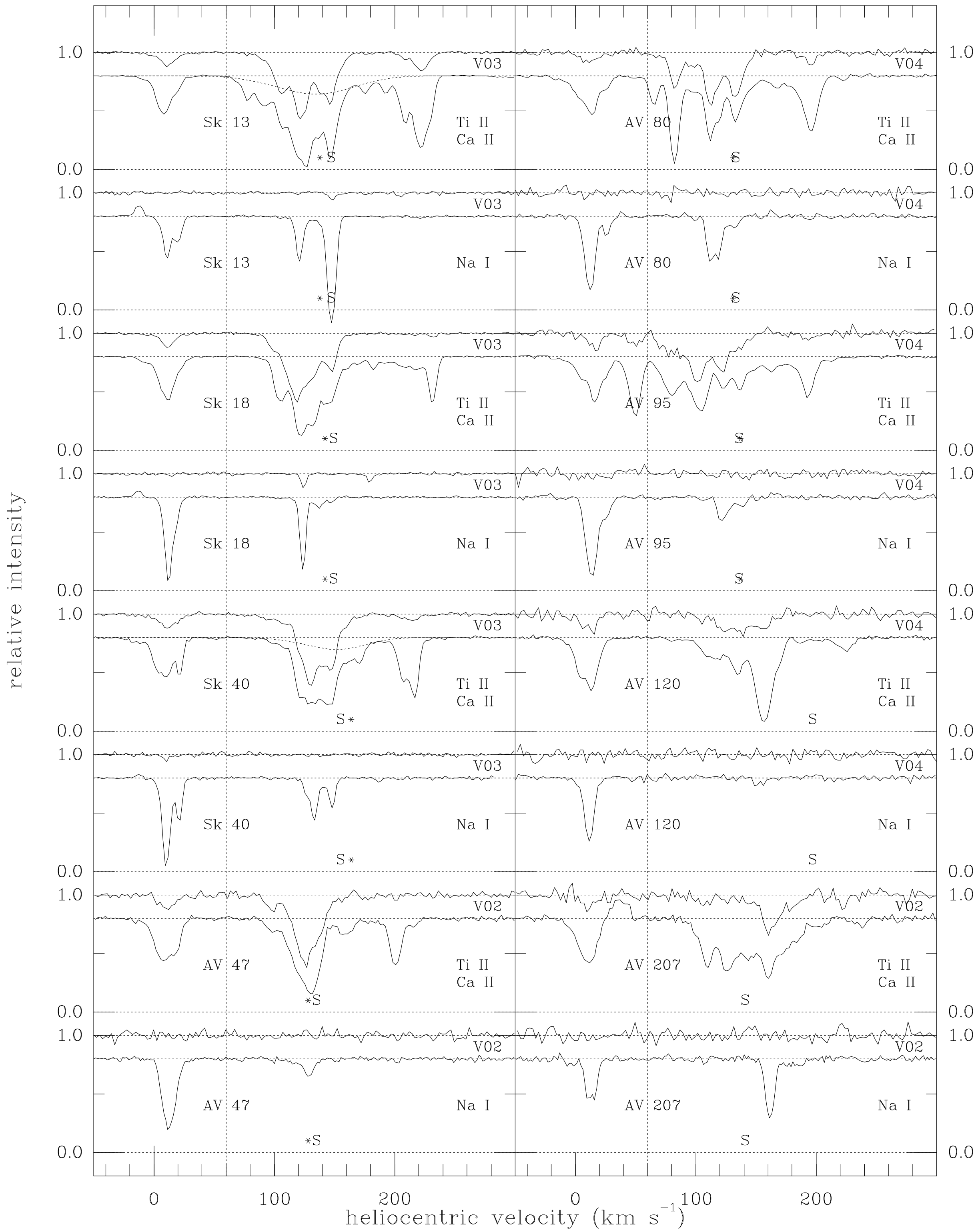

Figure A2. The interstellar Ti II, Ca II, and Na I profiles toward the SMC and LMC. The source of the spectra has been noted at the right, just above the continuum [V = VLT + UVES (FWHM = 4.5–8.7 km s^{-1})]. The profiles of the weak Na I λ3302.3 line are offset by 0.2 above the profiles of the stronger λ5895.9 line (on the same vertical scale). Dotted lines indicate stellar S II and Ca II lines adopted in the Ca II profile fits; estimates for the stellar radial velocities derived from other lines are noted by asterisks (literature) and/or S (Welty & Crowther, in prep.). Note that a wider velocity range is covered than for the Galactic profiles. For a number of the LMC sight lines, the LMC Na I λ5889 (D2) absorption, at about -303 km s^{-1} relative to the λ5895 (D1) absorption, is blended with the Galactic D1 absorption near $v \sim 0$ km s^{-1}.

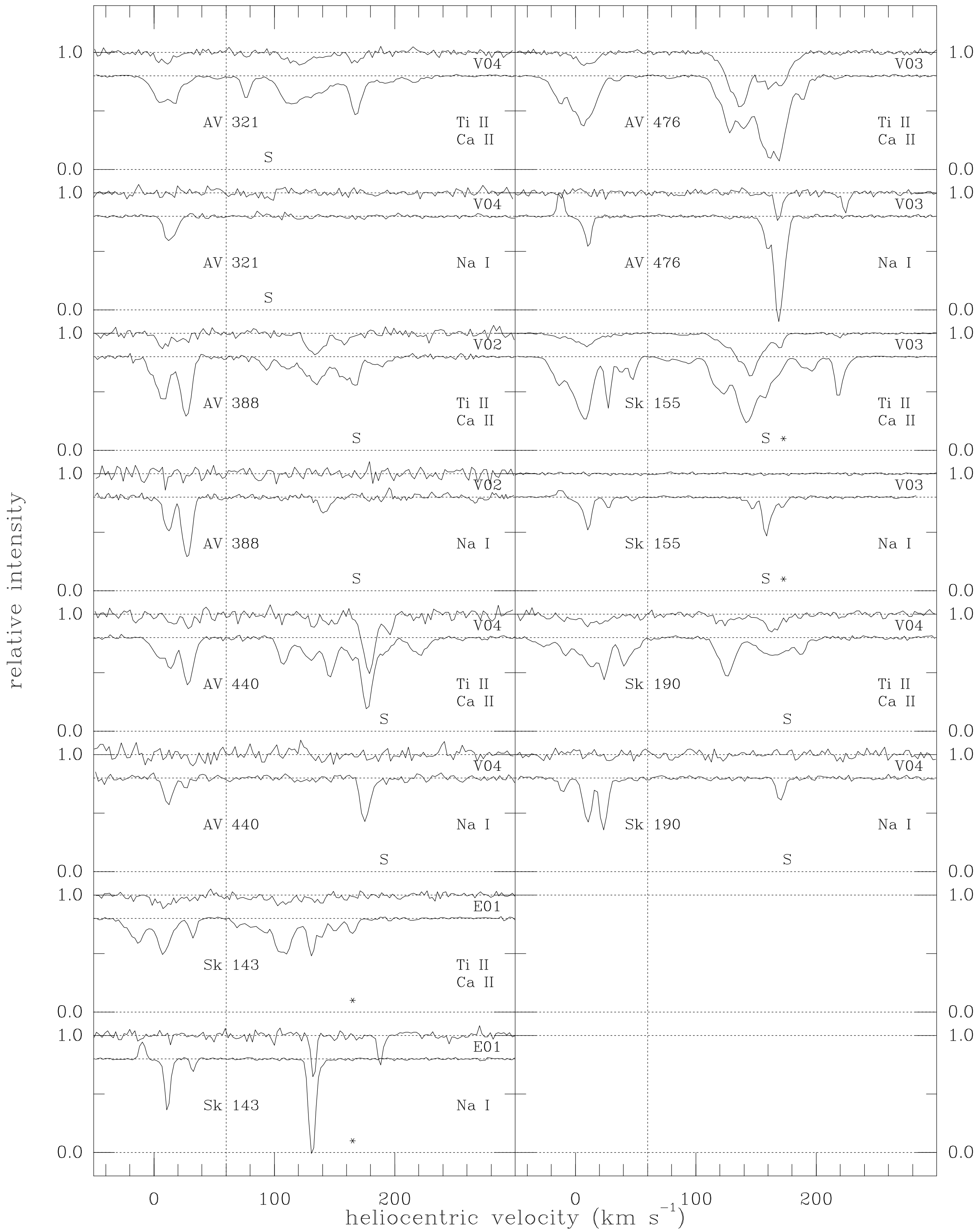

Figure A2 – *continued*

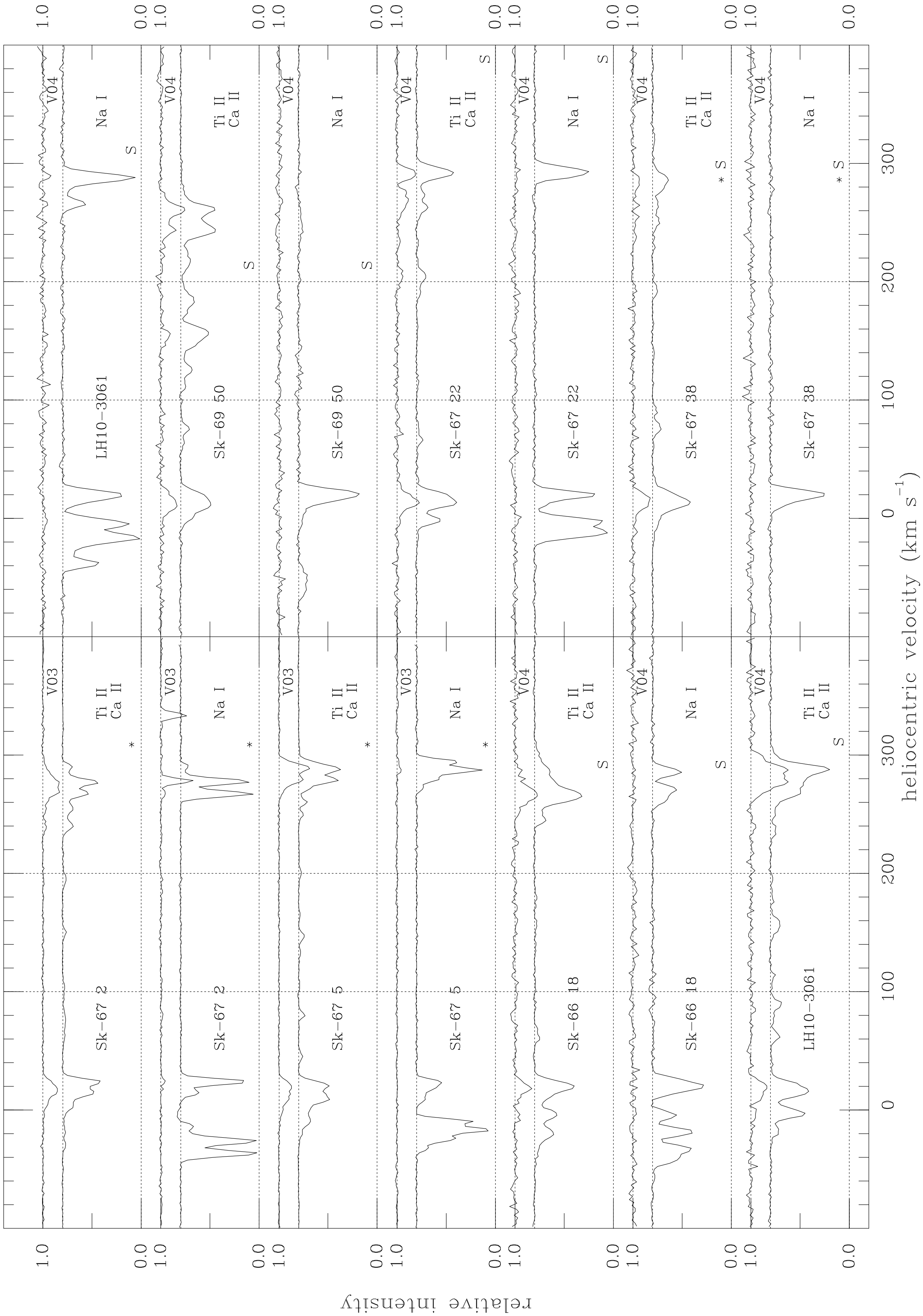

Figure A2 – *continued*

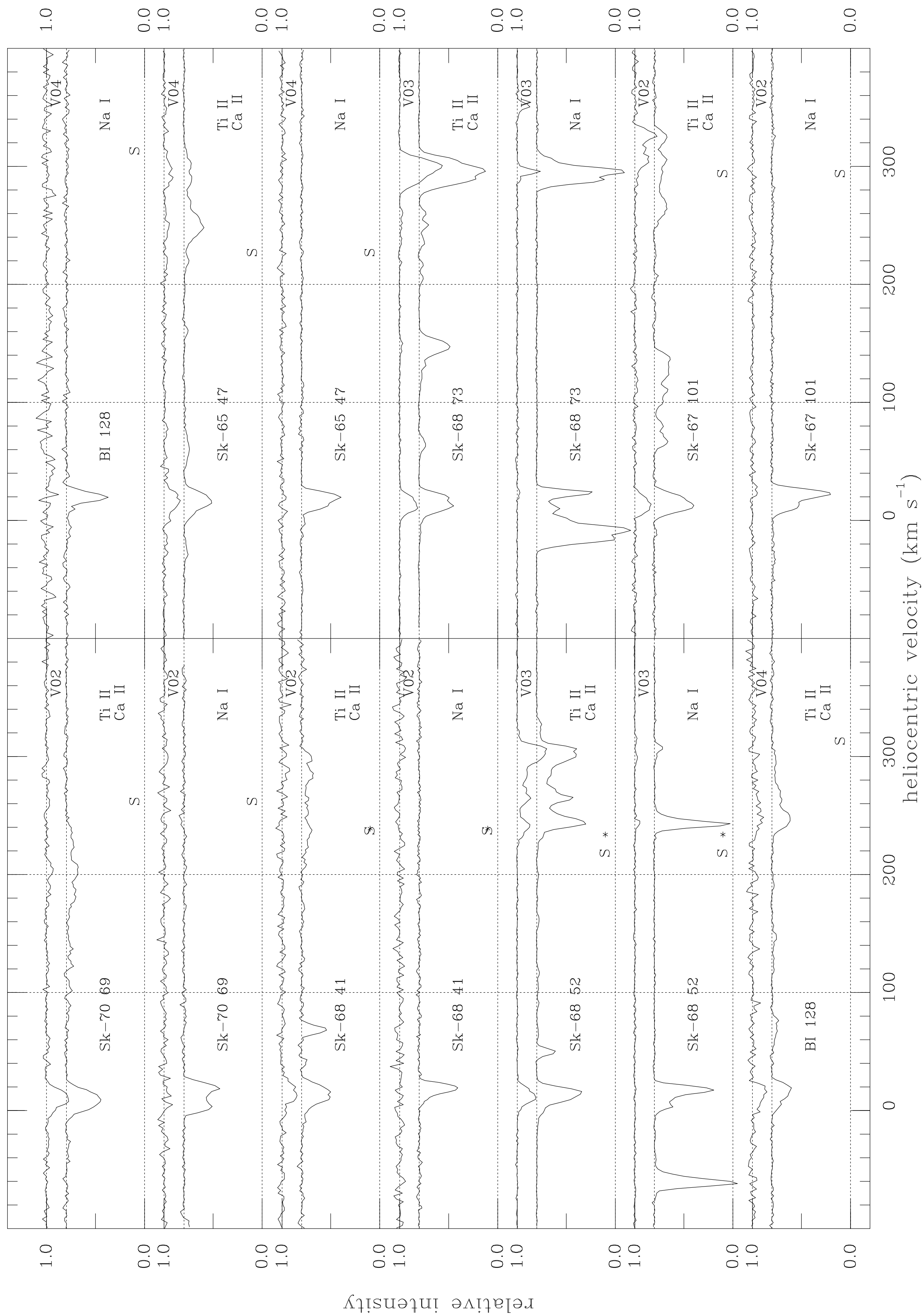

Figure A2 – *continued*

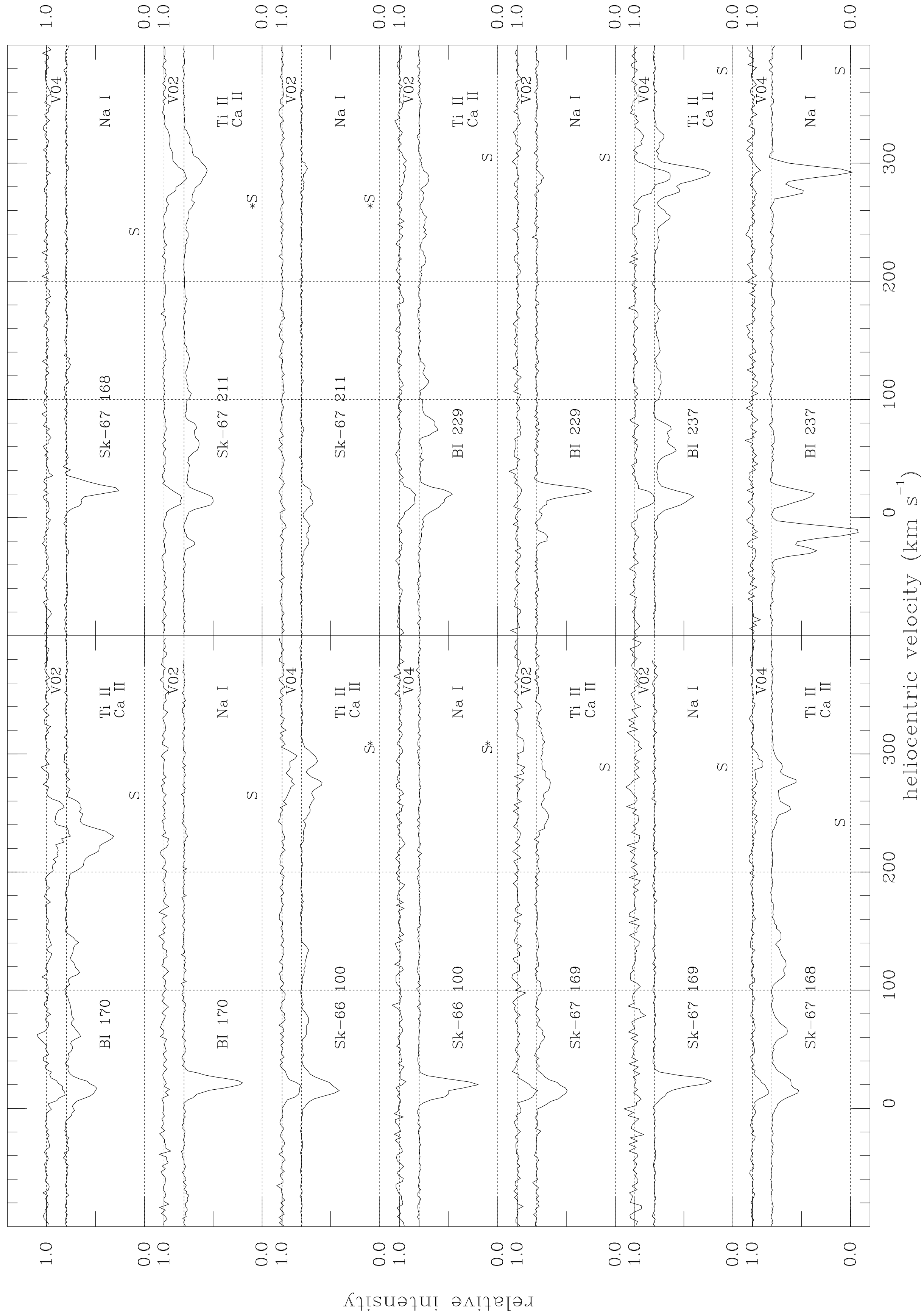

Figure A2 – *continued*

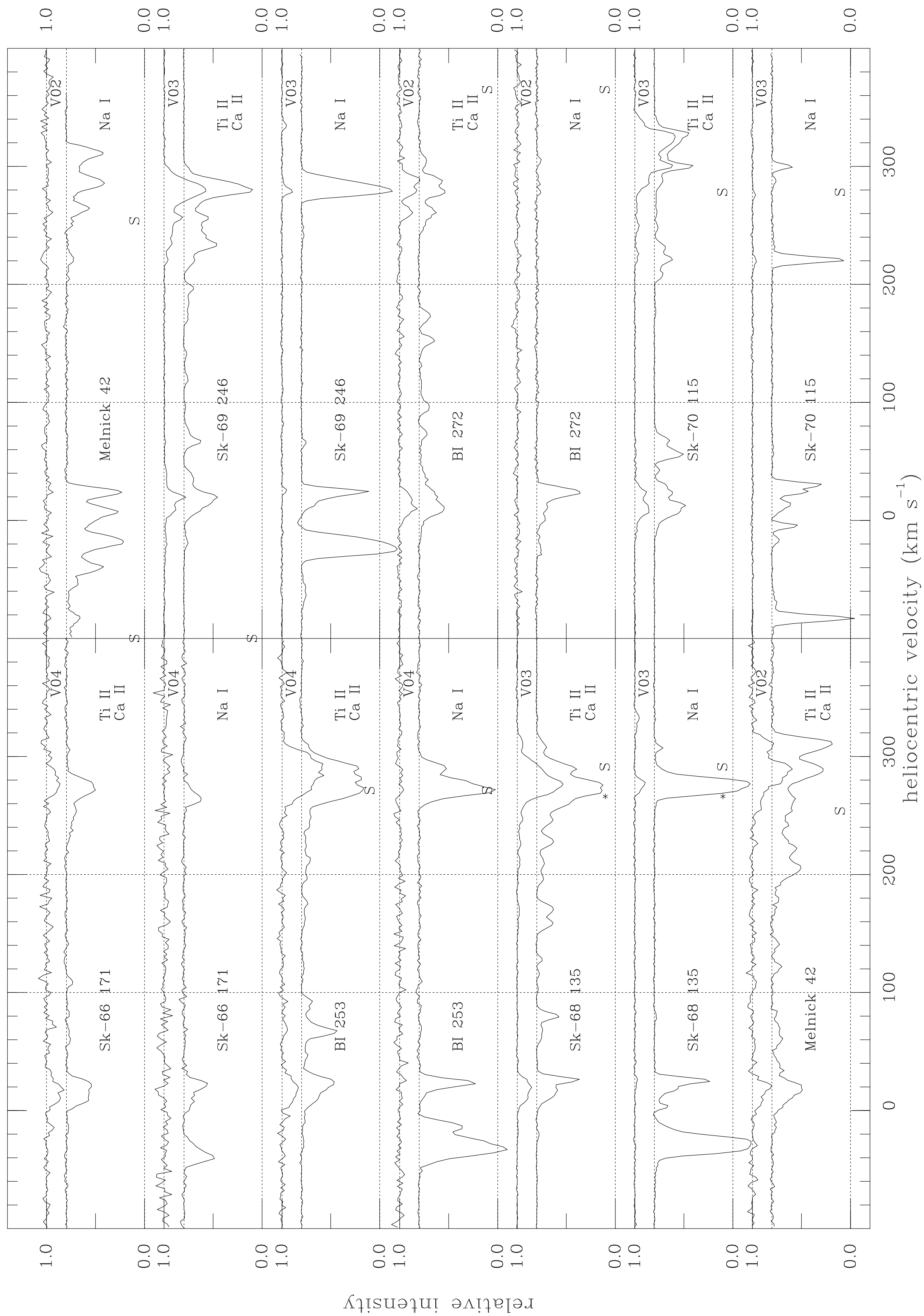

Figure A2 – *continued*

Table A1. Ti II component structures.

Star Comp	v (km s^{-1})	b (km s^{-1})	N_{10} (cm^{-2})	Ti II/Ca II
HD 24398	H79		[2.1]	
1	−5.2	[1.4]	<1.8	<0.86
2	−2.9	(2.0)	<2.1	<2.63
3	9.1	(1.2)	<1.8	<0.56
4	11.1	[0.95]	3.6	0.44
5	13.7	[1.3]	2.8	0.06
6	14.9	[0.8]	1.3	0.07
7	16.1	(2.0)	1.9	0.20
8	22.6	[2.5]	<2.1	<0.43
HD 24760	K94		[1.3]	
1	2.6	[1.0]	<0.6	<1.50
2	5.4	[0.9]	3.2	1.07
3	7.3	[0.95]	3.2	0.56
4	9.4	[1.4]	2.9	0.47
5	12.5	[1.9]	2.8	0.33
6	15.7	[1.2]	0.6	0.26
7	19.8	[2.0]	2.8	0.23
8	23.5	[0.5]	<0.6	<2.00
HD 32630	K95		[2.9]	
1	6.6	[2.2]	3.3	0.52
2	10.5	[1.5]	1.8	0.26
3	17.6	[2.2]	1.1	0.31
HD 36486	K95		[1.3]	
1	−5.1	(2.0)	<0.8	<0.73
2	−0.9	(1.6)	<0.7	<0.70
3	2.6	[1.6]	<0.8	<0.50
4	6.6	[2.3]	0.6	0.15
5	9.9	[1.4]	0.5	0.13
6	12.1	[1.2]	0.6	0.20
7	15.7	[2.8]	1.8	0.18
8	21.0	(1.7)	2.9	0.49
9	21.7	[0.6]	<1.7	<0.18
10	24.2	(1.8)	1.7	0.45
11	26.5	[1.0]	0.7	0.39
12	29.4	[1.95]	1.4	0.50
13	35.0	[2.8]	0.4	0.14
14	37.5	[0.5]	<0.6	<1.50
15	40.5	(1.6)	<0.7	<1.17
HD 37043	K95		[1.3]	
1	−4.2	[2.5]	0.4	0.27
2	1.0	[2.1]	0.7	0.25
3	5.5	(2.4)	<1.2	<1.00
4	8.3	[0.65]	0.6	0.06
5	12.0	(2.8)	<1.2	<0.26
6	17.8	(2.8)	1.8	0.43
7	23.2	(2.0)	1.8	0.60
8	25.2	[1.4]	4.8	0.60
9	28.7	[2.7]	5.7	0.36
10	33.2	[1.2]	6.0	0.22
11	35.7	(2.0)	1.7	0.61
12	40.5	[2.4]	1.0	0.26
HD 37128	K94		[1.0]	
1	−0.4	[2.5]	1.0	0.33
2	0.3	(1.0)	<0.9	<1.00
3	2.0	[0.8]	<0.9	<0.60
4	2.6	[0.4]	<1.1	<0.25
5	3.4	(1.0)	<1.1	<0.44
6	4.8	[1.0]	1.3	0.35
7	6.3	[0.5]	<0.7	<1.75
8	8.5	[2.5]	2.1	0.23
9	10.0	[1.0]	<1.5	<0.37
10	10.4	[0.35]	<1.5	<0.56
11	11.1	[0.7]	0.8	0.11
12	12.1	[0.4]	1.0	0.40
13	12.7	[1.2]	<1.1	<0.17
14	14.4	[0.6]	0.6	0.50
15	16.2	[1.4]	<1.1	<0.37
16	16.9	[0.5]	<1.0	<0.53
17	18.0	[1.5]	1.0	0.17
18	20.1	(1.5)	0.8	0.31
19	24.0	[1.8]	1.9	0.19
20	24.6	[0.65]	1.4	0.24
21	25.7	[0.8]	2.2	0.42
22	27.7	[1.15]	3.9	0.20
23	29.4	(1.0)	1.4	0.78
24	36.5	[1.5]	1.0	0.71
25	40.0	[2.3]	1.1	1.10
HD 37742	K95		[1.6]	
1	−7.8	[1.5]	<0.9	<0.75
2	−4.7	[1.7]	1.0	0.09
3	−1.4	[2.25]	<1.2	<0.09
4	2.7	[1.8]	<1.0	<0.43
5	6.4	(1.8)	<1.1	<0.50
6	10.3	[2.15]	<1.4	<0.21
7	11.9	[0.55]	<1.0	<1.11
8	14.4	[2.15]	1.4	0.22
9	18.0	(1.5)	<2.0	<1.25
10	18.7	[0.75]	0.9	0.27
11	19.9	[1.0]	0.9	0.23
12	21.9	[1.2]	2.8	0.55
13	23.4	[0.75]	1.9	0.15
14	24.9	(1.5)	4.4	0.31
15	26.7	[0.4]	<1.6	<0.40
16	27.3	[0.6]	<1.5	<0.83
17	29.2	[0.85]	<0.8	<0.80
18	37.5	[2.4]	<1.2	<0.38
HD 47839	K94,K95		[2.4]	
1	−14.8	[2.1]	<1.4	<1.17
2	−9.6	[1.0]	<1.2	<1.00
3	−8.3	[0.5]	0.8	0.18
4	−4.6	[2.4]	2.3	0.29
5	−1.8	[0.95]	<1.3	<0.24
6	−0.1	(1.5)	1.5	0.75
7	2.6	(2.5)	1.2	0.15
8	6.1	[1.8]	1.0	0.06
9	7.1	[0.8]	0.7	0.28
10	11.6	[2.9]	8.0	0.16
11	14.6	(1.5)	4.5	0.90
12	17.7	[1.5]	2.5	0.35
13	19.1	[1.5]	5.9	0.35
14	21.4	[1.0]	5.2	0.42
15	23.3	[1.0]	4.9	0.47
16	24.3	[1.0]	<3.0	<0.45
17	25.3	[1.3]	6.4	0.45
18	27.5	[1.3]	4.1	0.45
19	29.7	(1.6)	3.7	0.46
20	32.9	[1.6]	6.1	0.53

Table A1 – *continued*

Star Comp	v (km s^{-1})	b (km s^{-1})	N_{10} (cm^{-2})	Ti II/Ca II
21	36.2	[1.8]	2.4	0.33
22	39.1	(0.9)	<1.0	<1.00
HD 62542	V03		[6.4]	
1	7.1	[2.5]	<5.7	<0.85
2	11.2	[1.5]	5.5	0.30
3	13.9	[1.5]	5.8	0.21
4	17.7	(2.5)	4.4	0.30
5	22.7	(2.0)	6.8	0.69
6	27.0	[2.0]	7.7	0.57
7	32.0	(2.0)	<6.4	<4.92
HD 73882	V03		[6.0]	
1	−3.8	(3.0)	<6.0	<2.00
2	2.0	(3.0)	<6.0	<1.62
3	7.0	(3.0)	5.8	0.62
4	12.7	(3.0)	14.8	0.46
5	18.2	(3.0)	20.8	0.24
6	23.2	(2.5)	30.8	0.33
7	27.1	(2.5)	38.8	0.47
8	32.1	(2.5)	12.4	0.61
9	35.9	(2.5)	<8.1	<0.27
10	41.2	(2.5)	13.4	0.35
11	45.7	(2.5)	9.6	0.20
12	51.6	[2.2]	<5.7	<0.52
HD 91316	K95		[0.8]	
1	−14.2	[2.2]	9.1	0.73
2	−12.7	(1.5)	4.5	0.56
3	−10.9	[1.25]	5.0	0.36
4	−8.9	(1.5)	8.4	0.71
5	−7.2	[0.6]	2.7	1.04
6	−4.7	[2.45]	11.5	0.75
7	−1.2	[1.15]	2.3	0.33
8	1.0	[1.0]	2.0	0.71
9	4.2	(1.6)	1.6	1.33
10	7.6	[1.2]	1.4	1.40
11	11.0	[2.6]	7.0	1.71
12	15.3	[1.3]	9.9	2.15
13	17.6	(1.4)	6.3	1.17
14	18.3	[0.55]	<1.4	<0.56
15	19.4	[1.0]	2.4	0.96
16	21.0	[0.7]	1.8	1.13
17	22.8	(1.5)	3.4	1.48
18	24.1	[1.0]	2.2	1.29
19	25.8	[1.0]	3.1	1.29
HD116658	K95		[0.6]	
1	−11.8	[3.3]	1.2	0.41
2	−3.4	[1.3]	1.1	0.38
HD141637	K95		[8.0]	
1	−33.5	[1.5]	9.8	3.63
2	−28.9	[2.3]	6.2	2.70
3	−25.8	[1.9]	7.4	3.52
4	−17.3	(1.0)	<5.1	<3.40
5	−16.3	[0.5]	<4.5	<1.80
6	−14.9	[0.6]	<3.3	<3.30
7	−12.5	[1.1]	2.8	2.00
8	−9.2	[1.0]	6.4	3.37
9	−8.4	[0.45]	<9.0	<2.31
10	−7.7	[0.8]	8.6	1.18

Table A1 – *continued*

Star Comp	v (km s^{-1})	b (km s^{-1})	N_{10} (cm^{-2})	Ti II/Ca II
11	−6.5	[0.45]	<6.6	<1.50
12	−5.8	[1.3]	8.4	5.60
HD143018	K95		[1.1]	
1	−34.5	[1.5]	1.3	2.17
2	−29.7	[2.5]	4.9	1.88
3	−23.6	[2.3]	3.2	1.28
4	−16.3	[1.6]	<0.7	<0.70
5	−12.7	[1.9]	<0.8	<0.80
6	−7.4	[1.0]	1.2	1.50
HD144217	K95		[1.2]	
1	−31.9	[2.2]	2.8	3.50
2	−28.5	[1.9]	4.9	1.88
3	−24.1	[2.2]	3.3	2.54
4	−20.5	[2.1]	<0.9	<0.41
5	−14.9	(1.8)	0.9	1.00
6	−10.5	(1.8)	<1.8	<0.25
7	−10.0	[0.8]	1.7	0.18
8	−8.7	[0.7]	<1.4	<0.07
9	−8.0	(1.6)	4.4	0.44
HD147165	K95		[1.5]	
1	−30.5	[1.4]	2.3	1.53
2	−27.5	(2.0)	2.4	1.41
3	−21.1	(2.5)	1.5	1.00
4	−16.5	(2.5)	3.7	2.31
5	−11.9	(2.5)	1.6	0.44
6	−8.0	[2.0]	5.5	0.51
7	−6.1	[0.9]	4.6	0.21
8	−4.7	[1.1]	13.4	0.56
9	−3.5	(1.5)	2.9	0.51
HD147888	V00		[2.1]	
1	−30.6	[1.2]	4.9	>1.63
2	−25.2	[1.2]	3.3	>1.10
3	−19.9	[1.2]	4.1	>1.37
4	−13.3	(1.5)	2.8	>0.93
5	−11.7	(1.5)	<4.8	<1.55
6	−8.8	[1.0]	(20.6)	0.22
7	−7.1	[1.0]	(5.4)	0.08
HD147933	V00		[1.6]	
1	−29.7	(1.5)	4.1	2.41
2	−25.6	(1.5)	2.7	1.97
3	−20.3	[1.2]	3.8	>2.24
4	−15.7	(1.5)	1.3	>0.62
5	−13.5	(1.2)	2.0	0.53
6	−9.6	[1.2]	7.1	0.14
7	−7.9	[1.0]	20.1	0.24
HD148184	V00		[1.8]	
1	−31.4	(1.5)	4.8	2.29
2	−28.0	(1.5)	6.8	0.64
3	−25.3	(1.5)	9.3	0.90
4	−22.3	[1.4]	6.3	0.85
5	−18.7	(3.0)	6.4	0.89
6	−12.7	[1.6]	<1.8	<0.21
7	−10.7	[1.2]	2.8	0.08
8	−8.5	[0.9]	<1.8	<0.14
9	−5.7	(1.5)	<1.2	<0.38

Table A1 – *continued*

Star Comp	v (km s^{-1})	b (km s^{-1})	N_{10} (cm^{-2})	Ti II/Ca II
HD149757	K94,K95		[1.3]	
1	−35.4	(2.0)	0.9	–
2	−31.6	(1.0)	1.1	1.22
3	−28.9	(1.6)	11.6	1.66
4	−26.3	[0.9]	2.5	1.25
5	−22.7	[1.5]	3.1	1.19
6	−18.8	[1.5]	0.8	0.15
7	−16.5	[0.8]	0.4	0.06
8	−14.6	[0.95]	2.1	0.08
9	−12.6	[0.7]	2.0	0.30
10	−10.0	(1.0)	0.4	0.25
11	−5.6	(2.0)	0.8	–
HD152236	V00		[1.7]	
1	−54.4	(3.0)	<1.2	<0.20
2	−47.9	(2.5)	<1.2	<0.15
3	−42.9	(2.5)	2.1	0.10
4	−38.4	(2.5)	2.1	0.11
5	−33.3	(2.5)	<1.4	<0.13
6	−28.9	(2.5)	1.9	0.19
7	−24.5	(2.5)	3.1	0.15
8	−21.3	(2.0)	16.6	0.17
9	−17.0	(2.0)	21.2	0.27
10	−13.8	(2.0)	18.3	0.30
11	−10.2	(2.0)	20.3	0.23
12	−6.9	(2.0)	36.5	0.25
13	−2.5	(2.0)	26.8	0.27
14	1.8	(2.0)	10.1	0.18
15	6.2	(2.5)	3.8	0.20
16	10.6	(2.5)	4.8	0.32
17	15.9	(3.0)	3.2	0.30
HD154368	V00		[1.7]	
1	−26.4	(2.8)	5.0	0.47
2	−20.7	(1.8)	6.9	0.18
3	−18.0	(1.8)	7.7	0.40
4	−14.5	[1.2]	8.9	0.22
5	−10.4	(2.5)	9.5	0.26
6	−5.4	(2.0)	26.1	0.26
7	−3.0	(2.0)	10.8	0.10
8	1.0	(2.0)	9.9	0.27
9	7.9	[3.3]	18.6	0.27
HD159561	K94,K95		[1.5]	
1	−32.3	[2.4]	1.1	0.41
2	−25.5	[2.7]	11.3	0.39
3	−21.4	[1.2]	1.0	0.42
HD197345	K94		[1.8]	
1	−23.1	(1.2)	2.0	–
2	−21.7	(1.2)	0.9	0.13
3	−20.0	(1.2)	2.9	2.90
4	−15.4	(0.7)	0.6	0.50
5	−13.4	0.6	14.9	0.22
6	−9.8	0.8	21.4	0.32
7	−7.7	[1.2]	3.2	0.18
8	−5.7	[0.65]	1.4	0.11
9	−4.0	[0.5]	0.6	0.06
10	−2.8	[0.5]	<0.9	<0.15
11	−1.2	(0.8)	<0.9	<1.50

Table A1 – *continued*

Star Comp	v (km s^{-1})	b (km s^{-1})	N_{10} (cm^{-2})	Ti II/Ca II
12	1.5	(0.5)	<0.6	<0.60
13	5.4	(0.5)	<0.9	<0.50
14	6.5	[0.7]	<0.9	<0.90
HD212571	V00		[1.2]	
1	−21.1	[1.45]	0.7	0.20
2	−18.0	[1.0]	1.6	0.59
3	−16.7	[0.55]	2.4	0.37
4	−13.9	[2.0]	9.4	0.36
5	−11.4	[0.75]	4.2	0.30
6	−10.1	[0.65]	3.1	0.12
7	−8.4	(1.0)	6.6	1.03
8	−6.9	[0.5]	<6.9	<1.60
9	−5.0	[1.2]	5.8	0.55
10	−3.0	(1.0)	4.3	0.98
11	−1.2	[0.85]	6.9	0.47
12	0.5	[0.6]	1.0	0.29
13	2.5	[1.95]	2.3	0.55
HD217675	K94		[1.9]	
1	−20.2	[1.25]	<0.9	<0.26
2	−17.0	(1.5)	<0.9	<0.60
3	−13.9	[1.6]	2.1	0.46
4	−10.9	[1.3]	4.3	0.30
5	−8.4	[0.75]	3.7	0.23
6	−6.6	[1.35]	5.3	0.58
7	−3.9	(1.0)	<0.9	<0.90
8	4.1	[0.9]	<0.7	<0.25
9	6.9	[1.0]	0.9	1.00

Column densities are in units of 10^{10} cm^{-2}; limits are 3-σ. Typical 3-σ uncertainties (given in square braces on first line for each sight line) are for a single component with b = 2.0 km s^{-1} and include both photon noise and continuum placement uncertainties. Values in parentheses were fixed (somewhat arbitrarily) in the fits; values in square braces were also fixed in the fits, but are better determined.

Table A2. Ti II equivalent widths and column densities.

HD	Name	Ref	W_λ	N(AOD)	N(fit)
886	γ Peg	1	2.2±0.4	10.78±0.07	
2905	κ Cas	1	42.0±3.0	12.09±0.06	
		2	44.0±0.5	(12.08±0.01)	
3379		3	<4.3	<11.07	
4180	o Cas	1	7.0±2.0	11.30±0.13	
5394	γ Cas	1	4.4±0.7	11.09±0.08	
6882	ζ Phe	3	<1.3	<10.55	
10144	α Eri	3	<1.0	<10.44	
10516	ϕ Per	1	4.3±1.1	11.07±0.10	
14633		4	68.0±x.x	12.28±0.xx	
15371	κ Eri	3	13.9±0.8	(11.58±0.03)	11.65±0.06
16581		5	<9.0	<11.39	
16582		5	7.0±0.7	(11.29±0.04)	11.30±0.04
18100		5	<15.0	<11.63	
18216		5	<6.0	<11.24	
18484		2	5.2±x.x	(11.18±0.xx)	
18654		2	3.0±x.x	(10.93±0.xx)	
21278		6	14.0±0.5	11.59±0.02	
22192	ψ Per	1	13.0±2.0	11.56±0.06	
22586		7	13.0±3.0	(11.55±0.11)	11.65±0.11
22928	δ Per	1	1.5±0.6	10.62±0.17	
22951	40 Per	1	20.0±2.0	11.77±0.07	
23180	o Per	1	9.8±3.4	11.43±0.13	
		2	6.5±0.4	(11.25±0.03)	
		8	5.0±x.x	11.14±0.xx	
		9	5.9±1.1	11.22±0.07	
23408	20 Tau	6	<5.0	<11.14	
23480	23 Tau	2	2.2±0.4	(10.78±0.08)	
		2	1.8±x.x	(10.68±0.xx)	
		6	3.3±0.6	10.96±0.08	
23630	η Tau	1	2.5±1.0	10.84±0.15	
23850	27 Tau	1	1.8±1.7	10.70±0.29	
24398	ζ Per	1	6.2±1.3	11.24±0.09	
		10	3.3±0.2	(10.96±0.03)	
		2	6.2±0.4	(11.23±0.03)	
		2	4.7±x.x	(11.13±0.xx)	
		11	5.5±0.2	(11.18±0.02)	
		12	3.0±x.x	10.94±0.xx	
		9	2.8±0.8	10.89±0.10	
24534	X Per	9	7.8±1.6	11.34±0.07	
24760	ϵ Per	1	4.6±0.6	11.11±0.07	
		13	5.7±0.5	11.20±0.04	11.20±0.02
24912	ξ Per	1	13.0±1.0	11.57±0.05	
		2	12.8±0.3	(11.55±0.01)	
		8	11.0±2.0	11.48±0.08	
25204	λ Tau	1	2.3±0.9	10.80±0.15	
27657	θ Ret	3	<3.7	<11.01	
27778	62 Tau	9	5.0±2.0	11.15±0.04	
28497		6	8.3±0.5	11.36±0.03	
29138		14	65.8±4.0	12.29±0.02	12.28±0.06
29248	ν Eri	6	4.4±0.7	11.11±0.08	
30614	α Cam	1	51.0±3.0	12.19±0.06	
		2	47.1±0.4	(12.11±0.01)	
		15	38.0±x.x	12.04±0.xx	
30677		14	52.8±5.1	12.19±0.02	12.19±0.07
30836	π^4 Ori	1	4.8±1.4	11.13±0.12	
31726		5	6.0±1.0	(11.22±0.06)	11.30±0.06
32612		5	6.0±1.0	(11.22±0.06)	11.26±0.09
32630	η Aur	13	1.9±0.7	10.75±0.15	10.79±0.17
33328		14	12.5±1.3	11.54±0.03	11.55±0.08
34078	AE Aur	15	27.0±x.x	11.89±0.xx	
34085	β Ori	3	15.0±1.5	(11.62±0.04)	11.65±0.07
		6	1.0±0.2	10.47±0.07	

Table A2 – *continued*

HD	Name	Ref	W_λ	N(AOD)	N(fit)
34179		5	<13.5	<11.65	
34748		5	6.0±1.0	(11.22±0.06)	11.16±0.09
34816	λ Lep	3	5.4±0.6	(11.17±0.05)	11.18±0.05
35149	23 Ori	2	5.5±0.5	(11.18±0.03)	11.23±0.03
		2	4.0±x.x	(11.06±0.xx)	
		9	6.6±1.3	11.27±0.07	
		16	5.8±1.0	11.22±0.06	
35411	η Ori	1	3.2±1.1	10.94±0.14	
35468	γ Ori	1	2.3±0.3	10.81±0.06	
35575		5	<9.0	<11.39	
36486	δ Ori	1	5.6±1.2	11.19±0.09	
		13	3.9±0.8	11.03±0.09	11.04±0.04
		17	–	11.15±0.04	
36646		14	13.3±1.7	11.56±0.04	11.58±0.09
36861	λ Ori	1	17.0±2.0	11.68±0.05	
		15	21.0±x.x	11.77±0.xx	
		14	19.0±1.5	11.74±0.03	11.74±0.05
37022	θ^1 Ori C	9	10.2±2.4	11.46±0.09	
37043	ι Ori	1	11.0±2.0	11.50±0.07	
		13	8.0±0.6	11.35±0.03	11.39±0.03
		17	–	11.31±0.03	
37055		14	6.6±1.0	11.34±0.07	11.28±0.09
37128	ϵ Ori	1	11.0±2.0	11.47±0.06	
		13	8.6±0.8	11.38±0.04	11.38±0.02
		17	–	11.40±0.03	
37202	ζ Tau	6	11.0±0.8	11.50±0.03	
37468	σ Ori	1	10.0±2.0	11.45±0.09	
37490		14	15.7±1.5	11.67±0.04	11.66±0.06
37742	ζ Ori	1	5.5±0.8	11.18±0.06	
		13	5.2±0.9	11.17±0.08	11.18±0.06
38666	μ Col	3	22.0±3.5	(11.78±0.07)	11.83±0.xx
		6	14.0±0.5	11.57±0.02	
		18	–	<11.40	
		19	–	–	11.50±0.02
38771	κ Ori	1	4.2±1.1	11.06±0.10	
		6	3.7±0.4	11.00±0.05	
40111	139 Tau	1	36.0±4.0	12.02±0.07	
40494	γ Col	3	11.1±1.0	(11.49±0.04)	11.55±0.05
41117	χ^2 Ori	1	61.0±4.0	12.28±0.09	
		15	71.0±x.x	12.41±0.xx	
41161		18	–	–	12.28±0.04
42933	δ Pic	3	6.2±1.0	(11.23±0.07)	11.49±0.06
43285		14	9.3±1.8	11.40±0.06	11.41±0.12
44743	β CMa	1	1.2±0.5	10.50±0.14	
		3	<1.1	<10.48	
45725	β Mon	14	4.8±1.5	11.11±0.09	11.12±0.18
46185		14	13.9±1.9	11.62±0.03	11.61±0.09
47240		15	42.0±x.x	12.08±0.xx	
47670	ν Pup	3	<1.0	<10.44	
47839	15 Mon A	1	23.0±4.0	11.82±0.09	
		15	27.0±x.x	11.87±0.xx	
		13	22.1±2.1	11.79±0.04	11.79±0.02
48099		14	43.3±2.0	12.12±0.01	12.11±0.03
49131		14	7.6±0.9	11.31±0.05	11.31±0.05
50013	κ CMa	1	6.1±2.5	11.22±0.15	
50896		6	46.0±1.3	12.14±0.01	
		14	37.5±3.2	12.07±0.05	12.05±0.07
52089	ϵ CMa	1	3.0±1.2	10.92±0.16	
		3	<0.8	<10.34	
52918	19 Mon	14	5.2±1.7	11.16±0.10	11.15±0.16
53138	o^2 CMa	1	11.0±1.0	11.50±0.05	
		3	10.0±1.5	(11.44±0.07)	11.49±0.06
53975		18	–	–	12.13±0.04

Table A2 – *continued*

HD	Name	Ref	W$_\lambda$	N(AOD)	N(fit)
54662		15	33.0±x.x	11.97±0.xx	
57060	29 CMa	1	10.0±3.0	11.45±0.11	
57061	τ CMa	6	20.0±1.6	11.76±0.03	
Walker 67		16	10.9±2.5	11.49±0.08	
58350	η CMa	1	9.2±1.3	11.41±0.07	
58343		14	8.4±2.0	11.40±0.04	11.38±0.12
58377		14	8.6±1.6	11.35±0.05	11.39±0.12
58978		14	7.9±0.8	11.28±0.04	11.35±0.05
60498		14	11.4±4.9	11.49±0.09	11.50±0.19
60848		5	28.0±3.0	(11.89±0.04)	11.91±0.04
61038		5	<6.0	<11.24	
61429		14	4.5±0.9	11.17±0.05	11.11±0.08
62542		16	12.6±2.4	11.55±0.07	11.53±0.13
64972		14	8.7±1.3	11.34±0.04	11.41±0.10
65575	χ Car	3	<2.0	<10.74	
66811	ζ Pup	3	10.1±1.0	(11.44±0.04)	11.50±0.06
		6	3.3±0.8	10.96±0.11	
		18	–	–	11.07±0.04
		19	–	–	11.16±0.06
67536		14	16.0±1.8	11.67±0.02	11.68±0.07
68273	γ^2 Vel	3	<2.0	<10.74	
		18	–	–	11.10±0.02
		19	–	–	11.11±0.04
68761		14	28.6±3.0	11.92±0.06	11.91±0.08
72067		14	7.6±1.4	11.38±0.16	11.34±0.13
72089		20	9.1±x.x	11.43±0.xx	
72127A		16	17.0±2.6	11.68±0.06	11.68±0.06
		20	11.9±x.x	11.54±0.xx	
72127B		16	17.2±1.5	11.69±0.03	11.78±0.08
		20	9.1±x.x	11.43±0.xx	
72350		20	11.7±x.x	11.52±0.xx	
72648		20	33.2±x.x	11.93±0.xx	
73882		16	51.6±3.2	12.18±0.02	12.19±0.03
74195	o Vel	3	<2.3	<10.80	
74280	η Hya	1	0.6±0.3	10.21±0.19	
74455		20	12.0±x.x	11.47±0.xx	
74575	α Pyx	3	7.1±1.5	(11.29±0.09)	11.72±0.07
74966		14	4.2±1.2	11.10±0.21	11.07±0.16
75821		20	<5.4	<11.30	
76131		14	19.1±1.5	11.75±0.02	11.75±0.06
76341		14	19.7±2.9	11.76±0.07	11.76±0.09
81188	κ Vel	21	<1.5	<10.62	
85504		5	<3.0	<10.94	
86440	ϕ Vel	3	25.3±1.8	(11.84±0.03)	11.95±0.06
88661		14	13.2±2.7	11.58±0.07	11.58±0.10
89688	23 Sex	5	14.0±2.0	(11.59±0.06)	11.60±0.06
90882		14	<4.4	<11.08	<11.08
90994		5	<4.5	<11.11	
91316	ρ Leo	1	27.0±2.0	11.88±0.04	
		13	29.7±0.7	11.93±0.01	11.92±0.01
92740		14	75.0±3.5	12.38±0.01	12.37±0.03
93030	θ Car	3	<3.0	<10.92	
		18	–	–	11.31±0.01
		19	–	–	11.31±0.02
93130		20	109.5±x.x	12.63±0.xx	
93131		14	84.5±2.7	12.43±0.01	12.42±0.03
93160		20	172.1±x.x	12.80±0.xx	
93161E		20	182.2±x.x	12.82±0.xx	
93161W		20	203.2±x.x	12.86±0.xx	
93204		20	70.1±x.x	12.43±0.xx	
93205		20	144.3±x.x	12.62±0.xx	
303308		20	164.5±x.x	12.74±0.xx	
93521		22	37.0±4.0	(12.01±0.05)	12.02±0.03

Table A2 – *continued*

HD	Name	Ref	W$_\lambda$	N(AOD)	N(fit)
94910		14	99.6±7.3	12.50±0.03	12.50±0.05
94963		14	69.3±3.4	12.33±0.03	12.32±0.04
96917		14	99.3±4.9	12.52±0.02	12.52±0.03
97253		14	88.3±8.3	12.51±0.02	12.45±0.06
97277	β Crt	3	<1.6	<10.64	
97585	69 Leo	22	6.8±3.8	(11.27±0.27)	11.27±0.28
97991		22	47.0±9.0	(12.11±0.08)	12.11±0.09
100841		14	5.6±2.1	11.19±0.11	11.20±0.19
104337		1	17.0±2.0	11.69±0.05	
105056		14	63.9±4.5	12.28±0.03	12.28±0.06
105435	δ Cen	3	<1.6	<10.64	
106625	γ Crv	16	1.4±0.1	10.59±0.03	
107070		5	<4.5	<11.11	
108248	α Cru	18	–	–	11.12±0.02
		19	–	–	11.12±0.04
109860		5	<6.0	<11.21	
109867		14	57.1±5.0	12.22±0.04	12.23±0.07
110432		16	10.4±0.4	11.46±0.01	
111973	κ Cru	3	46.0±3.0	(12.10±0.03)	12.18±0.08
112244		16	31.6±0.5	11.96±0.02	
112272		14	69.8±8.3	12.32±0.03	12.32±0.08
112842		14	81.7±4.4	12.39±0.02	12.39±0.05
113904	θ Mus	16	66.7±1.4	12.29±0.01	
		14	68.6±8.7	12.30±0.03	12.31±0.10
114213		16	93.1±1.2	12.45±0.01	
115363		14	115.6±8.6	12.57±0.01	12.57±0.05
115842		14	54.1±3.9	12.22±0.03	12.21±0.07
116658	α Vir	1	1.6±0.3	10.64±0.07	
		3	<2.8	<10.89	
		13	0.8±0.2	10.36±0.11	10.36±0.11
		19	–	–	10.49±0.13
118246		5	<9.0	<11.39	
118716	ϵ Cen	3	<1.8	<10.70	
119608		22	108.0±20.	(12.47±0.08)	12.55±0.08
		5	75.0±8.0	(12.32±0.04)	12.34±0.04
120086		5	25.0±6.0	(11.84±0.11)	11.84±0.11
120315	η UMa	1	1.0±0.4	10.43±0.14	
121968		23	38.0±2.0	(12.02±0.03)	12.06±0.03
122451	β Cen	18	–	–	11.05±0.04
		19	–	–	10.99±0.04
123884		7	172.0±26.	(12.68±0.07)	12.75±0.07
125924		23	46.0±5.0	(12.10±0.05)	12.14±0.05
135485		5	47.0±9.0	(12.11±0.09)	12.19±0.09
136239		14	155.7±13.5	12.69±0.02	12.68±0.06
137569		5	28.0±4.0	(11.89±0.07)	11.97±0.07
138485		5	7.0±1.0	(11.29±0.07)	11.28±0.07
138527		5	<3.0	<10.94	
141637	1 Sco	13	19.7±4.2	11.72±0.09	11.72±0.06
142758		14	162.1±11.2	12.70±0.01	12.71±0.06
143018	π Sco	1	2.5±0.6	10.85±0.10	
		13	4.0±0.7	11.04±0.08	11.03±0.02
143275	δ Sco	1	3.4±0.6	10.97±0.07	
		14	6.9±1.5	11.28±0.07	11.29±0.15
143448		14	17.2±2.5	11.64±0.07	11.70±0.10
144217	β^1 Sco	1	5.4±0.8	11.18±0.07	
		13	7.2±0.7	11.31±0.04	11.30±0.02
144470	ω^1 Sco	1	8.9±2.2	11.39±0.10	
145482		14	5.7±1.4	11.16±0.10	11.21±0.14
145502	ν Sco	1	9.2±2.7	11.41±0.12	
147165	σ Sco	1	10.0±2.0	11.47±0.08	
		13	13.0±0.8	11.58±0.03	11.58±0.02
147701		16	19.2±1.4	11.73±0.03	
147888	ρ Oph D	16	13.0±0.6	11.57±0.02	11.61±0.02

Table A2 – *continued*

HD	Name	Ref	W_λ	N(AOD)	N(fit)
147889		16	9.5±0.7	11.43±0.03	
147933	ρ Oph A	16	14.0±0.6	11.60±0.02	11.61±0.02
147971	ϵ Nor	3	<2.5	<10.84	
148184	χ Oph	16	13.1±0.6	11.57±0.02	11.58±0.02
		14	14.4±2.2	11.67±0.03	11.62±0.08
148379		16	69.8±0.8	12.32±0.01	
		14	70.1±5.0	12.10±0.04	12.33±0.05
148688		14	50.4±2.9	12.20±0.02	12.18±0.04
148937		14	46.7±3.8	12.13±0.05	12.13±0.07
149038	μ Nor	3	31.0±2.0	(11.93±0.03)	11.99±0.05
149363		7	52.0±9.0	(12.16±0.08)	12.22±0.08
149404		16	52.5±1.0	12.20±0.01	
149438	τ Sco	1	1.6±0.8	10.65±0.18	
149757	ζ Oph	1	9.6±0.6	11.43±0.04	
		2	9.8±0.2	(11.43±0.01)	
		3	9.7±0.6	(11.43±0.03)	11.48±0.05
		15	7.0±x.x	11.29±0.xx	
		13	9.1±0.8	11.41±0.04	11.41±0.01
		16	9.5±0.3	11.43±0.02	
149822		5	<4.5	<11.11	
149881		22	84.0±13.	(12.36±0.07)	12.47±0.07
150136		16	38.1±0.7	12.05±0.02	
150483		22	6.5±4.6	(11.25±0.39)	11.25±0.38
151890	μ^1 Sco	6	<2.4	<10.87	
151932		14	65.7±5.4	12.29±0.03	12.29±0.06
152003		14	64.2±5.0	12.27±0.03	12.30±0.06
152235		14	61.4±3.5	12.27±0.03	12.26±0.05
152236	ζ^1 Sco	3	51.4±3.0	(12.15±0.03)	12.24±0.07
		16	56.9±1.0	12.19±0.01	12.23±0.01
152270		14	60.6±5.5	12.25±0.03	12.25±0.07
154368		16	36.1±0.8	12.02±0.02	12.02±0.02
154811		14	47.2±4.8	12.15±0.02	12.14±0.08
154873		14	34.8±2.8	12.00±0.04	12.01±0.06
155806		14	37.2±5.1	12.04±0.04	12.04±0.10
156385		14	43.3±2.8	12.12±0.02	12.10±0.04
156575		14	44.7±3.4	12.12±0.02	12.12±0.05
157042	ι Ara	3	12.6±1.3	(11.54±0.04)	11.59±0.05
157056	θ Oph	1	8.6±1.5	11.38±0.08	
157246	γ Ara	3	11.4±0.9	(11.50±0.04)	11.52±0.05
158408	υ Sco	1	<2.0	<10.74	
158926	λ Sco	1	<2.0	<10.74	
159561	α Oph	1	5.3±0.9	11.17±0.08	
		13	4.6±0.4	11.11±0.03	11.12±0.02
161056		16	20.9±0.7	11.78±0.02	
163522		23	178.0±3.0	(12.69±0.02)	12.76±0.02
163745		14	21.1±2.9	11.77±0.03	11.81±0.08
163758		14	114.1±8.1	12.56±0.02	12.56±0.05
163800		14	36.9±3.2	12.05±0.02	12.04±0.05
164353	67 Oph	6	21.0±0.9	11.78±0.02	
164794	9 Sgr	3	17.8±2.0	(11.69±0.05)	11.83±0.07
		15	34.0±x.x	11.99±0.xx	
		14	41.5±3.4	12.10±0.08	12.08±0.06
165024	θ Ara	3	14.2±0.8	(11.59±0.03)	11.64±0.05
166182	102 Her	1	17.0±3.0	11.67±0.08	
166734		16	87.0±0.9	12.43±0.01	
166937	μ Sgr	1	33.0±3.0	11.99±0.06	
167264	15 Sgr	6	20.0±1.3	11.77±0.03	
		14	31.1±3.0	11.98±0.03	11.98±0.07
167971		16	71.0±0.9	12.33±0.01	
BD−14 5037		16	98.5±0.6	12.50±0.01	
169454		16	105.2±1.0	12.53±0.01	
		14	106.6±4.0	12.53±0.01	12.54±0.03
170235		14	37.6±4.4	12.07±0.03	12.06±0.07

Table A2 – *continued*

HD	Name	Ref	W_λ	N(AOD)	N(fit)
170740		16	16.0±0.5	11.66±0.02	
171432		14	55.6±3.0	12.23±0.04	12.23±0.04
172028		16	23.8±0.7	11.84±0.02	
173948	λ Pav	3	11.5±1.5	(11.50±0.06)	11.57±0.07
174638	β Lyr	1	13.0±3.0	11.58±0.09	
175191	σ Sgr	1	1.6±0.3	10.65±0.07	
176162		3	22.6±1.8	(11.79±0.03)	11.84±0.12
179406	20 Aql	3	28.2±2.7	(11.89±0.04)	12.93±0.xx
179407		23	83.0±4.0	(12.36±0.02)	12.41±0.02
182985		16	4.9±0.4	11.15±0.03	
183143		16	67.4±0.9	12.31±0.01	
184915	κ Aql	2	13.5±0.4	(11.57±0.01)	
		3	5.4±0.8	(11.17±0.07)	11.19±0.07
186882	δ Cyg	1	1.8±0.9	10.70±0.19	
188209		15	54.0±x.x	12.23±0.xx	
188220		16	5.9±0.4	11.22±0.02	
188294		14	7.7±1.4	11.28±0.06	11.34±0.11
189103	θ^1 Sgr	3	9.0±1.0	(11.39±0.05)	11.30±0.06
191877		17	–	12.24±0.02	
193924	α Pav	3	<2.2	<10.78	
195455		23	49.0±3.0	(12.13±0.02)	12.16±0.02
		7	28.0±5.0	(11.89±0.08)	11.93±0.08
195965		17	–	12.02±0.02	
197345	α Cyg	13	15.4±0.7	11.66±0.02	11.68±0.01
199081	57 Cyg	1	5.4±1.7	11.21±0.13	
199579		9	17.9±2.1	11.68±0.05	
200120	59 Cyg	1	12.0±3.0	11.55±0.11	
		6	7.0±0.8	11.28±0.05	
202904	υ Cyg	1	7.9±1.6	11.35±0.09	
203064	68 Cyg	2	26.5±0.4	(11.86±0.01)	
		6	27.0±0.9	11.89±0.01	
203664		5	40.0±4.0	(12.04±0.04)	12.04±0.04
203699		5	46.0±7.0	(12.10±0.07)	12.13±0.07
204076		7	31.0±5.0	(11.93±0.07)	11.90±0.07
204862		5	8.0±2.0	(11.34±0.12)	11.41±0.12
205637	ϵ Cap	16	13.4±0.4	11.58±0.02	
206144		23	51.0±4.0	(12.15±0.03)	12.20±0.03
		7	28.0±14.	(11.89±0.23)	11.93±0.23
206165	9 Cep	24	36.0±x.x	11.90±0.xx	
206267		24	9.0±x.x	11.62±0.xx	
		9	40.2±2.2	12.09±0.02	
206773		18	–	–	12.16±0.02
207198		9	47.1±2.9	12.16±0.03	
207330	π^2 Cyg	1	11.0±2.0	11.51±0.07	
209008	18 Peg	22	22.0±4.0	(11.78±0.08)	11.78±0.08
209339		18	–	–	12.14±0.03
209522		5	<3.0	<10.94	
209684		23	51.0±4.0	(12.15±0.03)	12.19±0.03
209975	19 Cep	6	48.0±1.0	12.16±0.01	
210121		2	26.9±x.x	(11.90±0.xx)	
		16	26.7±0.6	11.89±0.01	11.89±0.01
210191	35 Aqr	5	34.0±6.0	(11.97±0.08)	12.00±0.08
210839	λ Cep	1	46.0±3.0	12.14±0.06	
		24	55.0±x.x	12.09±0.xx	
212076	31 Peg	22	22.0±3.0	(11.78±0.06)	11.81±0.07
212571	π Aqr	22	19.0±3.0	(11.72±0.07)	11.71±0.07
		16	17.0±0.3	11.68±0.01	11.69±0.05
213236		5	<3.0	<10.94	
213420	6 Lac	1	23.0±3.0	11.82±0.08	
214080		22	34.0±6.0	(11.97±0.08)	12.03±0.07
214680	10 Lac	1	19.0±2.0	11.74±0.06	
214993	12 Lac	6	25.0±0.6	11.84±0.01	
214930		22	44.0±7.0	(12.08±0.07)	12.06±0.07

Table A2 – *continued*

HD	Name	Ref	W_λ	N(AOD)	N(fit)
215733		22	83.0±14.	(12.36±0.07)	12.35±0.07
		15	52.0±x.x	12.16±0.xx	
217675	o And	1	5.0±1.1	11.14±0.08	
		13	5.6±0.5	11.20±0.04	11.23±0.03
218376	1 Cas	1	23.0±3.0	11.83±0.07	
		2	20.0±0.5	(11.74±0.01)	
218624		2	7.0±x.x	(11.30±0.xx)	
218700	58 Peg	22	7.2±6.1	(11.30±0.55)	11.29±0.56
219188		22	25.0±4.0	(11.84±0.07)	11.86±0.07
219688	ψ^2 Aqr	22	3.5±1.8	(10.98±0.25)	10.85±0.42
		16	2.1±0.6	10.76±0.10	
219832		5	<3.0	<10.94	
220172		22	43.0±7.0	(12.07±0.07)	12.10±0.07
220787		5	15.0±5.0	(11.62±0.13)	11.65±0.13
		23	26.0±3.0	(11.85±0.05)	11.88±0.05
224572	σ Cas	2	14.5±0.3	(11.60±0.01)	
		6	11.0±0.7	11.50±0.03	
224990	ζ Scl	3	<1.7	<10.67	
233622		23	27.0±3.0	(11.87±0.05)	11.89±0.05
	JL 9	19	–	–	11.88±0.10
	JL 212	23	42.0±5.0	(12.06±0.06)	12.09±0.06
	Feige 110	17	–	11.59±0.03	
	LS 1274	19	–	–	11.68±0.04
BD+28 4211		17	–	11.08±0.08	
BD+39 3226		18	–	–	11.49±0.08
WD1034+001		18	–	–	11.10±0.20

Uncertainties (where available) are 1-σ; limits are 3-σ (see text for details and caveats); uncertainties are given by ±x.x or ±0.xx where no values were given in the original references; N(AOD) in parentheses are derived from the equivalent widths, assuming the lines to be optically thin. All column densities have been scaled to $f(3383) = 0.358$ (Morton 2003).

References:

1 = Stokes 1978 (3.7–5.5 km s^{-1}; AOD)
2 = Magnani & Salzer 1989, 1991 (12.4 km s^{-1})
3 = Welsh et al. 1997 (4.5 km s^{-1}; fit)
4 = Hobbs 1983
5 = Albert et al. 1993 (5.0 km s^{-1}; fit)
6 = Hobbs 1984 (5.6 km s^{-1}; AOD)
7 = Albert et al. 1994 (5.2 km s^{-1}; fit)
8 = Chaffee 1974
9 = new Kitt Peak coudé feed (3.4 km s^{-1}; AOD, fit)
10 = Hobbs 1979 (1.4 km s^{-1})
11 = Meyer & Roth 1991
12 = Chaffee & Lutz 1977
13 = new Kitt Peak coudé feed (1.3–1.5 km s^{-1}; AOD, fit)
14 = Hunter et al. 2006 (3.75 km s^{-1}; AOD, fit)
15 = Wallerstein & Goldsmith 1974
16 = new ESO/VLT UVES (3.8–4.5 km s^{-1}; AOD, fit)
17 = Prochaska et al. 2005 (4.5–6.0 km s^{-1}; AOD)
18 = Ellison et al. 2007 (3.0–6.7 km s^{-1}; fit)
19 = Lallement et al. 2008 (5.0 km s^{-1}; fit)
20 = Wallerstein & Gilroy 1992
21 = Dunkin & Crawford 1999 (0.32 km s^{-1})
22 = Albert 1983 (5.5 km s^{-1}; fit)
23 = Lipman & Pettini 1995 (5.3–6.6 km s^{-1}; fit)
24 = Chaffee & Dunham 1979

Table A3. QSOALS Ti II column densities.

QSO	z	H I	H_2	Zn II	[Zn/H]	Ca II	Ti II	[Ti/Zn]	Ref
Q0005+0524	0.8514	19.08	–	<11.24	< −0.47	–	<11.03	–	1
Q0012−0122	1.3862	20.26	–	<11.55	< −1.34	–	<11.96	–	1
Q0014+813	1.11	–	–	12.83	–	–	12.36	−0.76	2
Q0027−1836	2.402	21.75	17.30	12.79	−1.59	–	12.61	−0.47	3,4
Q0058+019	0.612	20.14	–	12.83	+0.06	–	12.51	−0.61	2
Q0100+130	2.3090	21.37	–	12.45	−1.55	–	<12.21	< −0.53	5,6
Q0118−272	0.558	–	–	–	–	12.37	12.27	–	2
P0133+0400	3.7736	20.55	–	<13.10	< −0.08	–	13.04	> −0.35	7
Q0138−0005	0.7821	19.81	–	12.80	+0.36	–	<11.48	< −1.61	8
Q0149+33	2.1408	20.50	–	11.48	−1.65	–	<12.17	< +0.40	5,6
Q0153+0009	0.7714	19.70	–	<11.96	< −0.37	–	12.02	> −0.23	8
Q0201+365	2.4628	20.38	–	12.76	−0.25	–	<12.19	< −0.86	5,6
J0255+00	3.2529	20.70	–	–	–	–	<12.81	–	6
J0256+0110	0.725	20.70	–	13.19	−0.14	–	12.27	−1.21	9
J0334−0711	0.5976	–	–	12.58	–	–	11.90	−0.97	10
Q0347−382	3.0247	20.73	14.53	11.91	−1.45	–	<12.20	< +0.00	3,11
Q0427−1302	1.5623	18.90	–	<11.58	< +0.05	–	<12.47	–	12
Q0449−1645	1.0072	20.98	–	12.47	−1.14	–	<11.47	< −1.29	8
Q0453−423	1.150	–	–	<12.63	–	–	<13.11	–	2
Q0454+039	0.8598	20.69	–	12.45	−0.87	–	12.66	−0.08	2
Q0458−020	2.0395	21.65	–	13.13	−1.15	–	<12.49	< −0.93	5,6
HE0515−4414	1.151	19.88	16.94	12.11	−0.40	12.72	<11.70	< −0.70	13,14,15
J0517−441	1.1496	–	–	12.22	–	12.74	<10.60	< −1.91	10
Q0528−251	2.8110	21.35	18.22	13.09	−0.89	–	<13.95	< +0.57	3,16
Q0551−364	1.962	20.70	17.42	13.02	−0.31	–	12.32	−0.99	3,5,2
Q0738+313	0.0912	21.18	–	<12.66	< −1.15	12.32	12.53	> −0.42	17,18
Q0738+313	0.2210	20.90	–	<12.83	< −0.70	11.91	<11.48	–	18
F0812+32	2.0668	21.00	–	12.21	−1.42	–	12.53	+0.03	5
F0812+32	2.6263	21.35	>19.88	13.15	−0.83	–	12.37	−1.07	5,7,19
Q0826−2230	0.9110	19.04	–	12.35	+0.68	11.75	<11.58	< −1.06	12
Q0827+243	0.2590	–	–	–	–	<11.60	<11.96	–	18
Q0827+243	0.5247	20.30	–	<12.80	< −0.13	–	<11.76	–	18
Q0836+113	2.4651	20.58	–	<12.12	< −1.09	–	<12.54	–	6
Q0841+129	2.4762	20.78	–	12.05	−1.36	–	<12.16	< −0.18	6
J0846+0529	0.7429	–	–	<12.80	–	13.06	13.00	> −0.09	10
Q0933+733	1.4790	21.62	–	12.67	−1.58	–	12.85	−0.11	17
Q0935+417	1.3726	20.52	–	12.25	−0.90	–	12.42	−0.12	2
J0953+0801	1.0232	–	–	12.25	–	13.57	12.10	−0.44	10
J1005+1157	0.8346	–	–	<12.80	–	–	<12.40	–	10
J1007+2853	0.8839	–	–	13.49	–	13.33	13.13	−0.65	20
Q1009−0026	0.8426	20.20	–	<11.85	< −0.98	–	11.85	> −0.29	12
Q1009−0026	0.8866	19.48	–	12.36	+0.25	12.26	<11.64	< −1.01	12
Q1054−0020	0.9514	19.28	–	<11.70	< −0.21	–	<12.36	–	21
Q1104−181	1.662	20.85	–	12.48	−1.00	–	12.20	−0.57	2,5
Q1107+0003	0.9547	20.26	–	<12.08	< −0.81	–	<13.01	–	18
J1107+0048	0.7403	21.00	–	13.23	−0.40	–	13.12	−0.40	9,10
Q1122−168	0.682	20.45	–	<11.76	< −1.32	–	11.56	> −0.49	2
J1129+0204	0.9650	–	–	12.80	–	13.11	12.79	−0.30	10
Q1157+014	1.944	21.70	–	12.99	−1.34	–	12.83	−0.45	22
J1203+1028	0.7463	–	–	12.63	–	13.05	<11.20	< −1.72	10
Q1209+0919	2.5841	21.40	–	12.98	−1.05	–	<12.65	< −0.62	5,7
Q1210+17	1.8918	20.60	–	12.40	−0.83	–	12.34	−0.35	6,22
Q1220−0040	0.9746	20.20	–	<11.69	< −1.14	–	<12.47	–	21
Q1223+175	2.4661	21.50	–	12.55	−1.58	–	<12.25	< −0.59	5,6
Q1228+1018	0.9376	19.41	–	<11.67	< −0.37	–	<11.65	–	21
P1253−0228	2.7828	21.85	–	12.85	−1.63	–	<12.84	< −0.30	5,7
J1323−0021	0.716	20.21	–	13.43	+0.59	–	12.49	−1.23	23
Q1330−2056	0.8526	19.40	–	<11.96	< −0.07	–	<11.45	–	21
Q1331+170	1.7765	21.18	19.65	12.54	−1.27	–	<11.62	< −1.21	24,5,25
J1430+0149	1.2418	–	–	12.94	–	12.85	12.79	−0.44	10
Q1436−0051	0.7377	20.08	–	12.74	+0.03	12.83	<11.71	< −1.32	21
Q1436−0051	0.9281	<18.80	–	12.26	> +0.83	12.28	<12.71	< +0.16	21
Q1455−0045	1.0929	20.08	–	<11.91	< −0.80	–	<12.44	–	21
Q1622+238	0.656	20.36	–	–	–	–	12.35	–	2

Table A3 – *continued*

QSO	z	H I	H_2	Zn II	[Zn/H]	Ca II	Ti II	[Ti/Zn]	Ref
Q1631+1156	0.9004	19.70	–	<12.18	< −0.15	12.17	<11.66	–	1
J1727+5302	0.9449	21.16	–	13.27	−0.52	–	12.90	−0.66	17
J1727+5302	1.0341	21.41	–	12.65	−1.39	–	<12.92	< −0.02	17
Q1946+766	1.7382	–	–	11.53	–	–	<12.45	< +0.63	16
Q2128−123	0.430	19.37	–	–	–	–	<11.13	–	2
Q2206−199	0.752	–	–	–	–	–	12.20	–	2
Q2206−199	1.920	20.65	–	12.91	−0.37	–	12.77	−0.43	5,6
Q2230+025	1.8644	20.85	–	12.72	−0.76	–	12.68	−0.33	5,22
Q2231−002	2.0661	20.56	–	12.35	−0.84	–	12.66	+0.02	5,26
J2240−0053	1.3606	–	–	12.62	–	–	<12.71	< −0.20	17
Q2318−1107	1.989	20.68	15.49	12.50	−0.81	–	<12.00	< −0.79	3,4
Q2335+1501	0.6798	19.70	–	12.53	+0.20	12.41	<11.36	< −1.46	8
Q2343+123	2.4313	20.40	13.69	12.20	−0.83	–	<11.85	< −0.64	3,4
Q2352−0028	0.8730	19.18	–	<11.67	< −0.14	<11.01	<11.36	–	1
Q2359−02	2.0951	20.70	–	12.60	−0.73	–	12.33	−0.56	5,6
WHP all	–	–	–	12.82	–	12.94	12.48	−0.63	27
WHP high Ca	–	–	–	13.16	–	13.10	12.31	−1.14	27
WHP low Ca	–	–	–	12.59	–	12.86	12.45	−0.43	27

References: 1 = Meiring et al. 2009; 2 = Ledoux et al. 2002 (and references therein); 3 = Noterdaeme et al. 2008; 4 = Noterdaeme et al. 2007; 5 = Prochaska et al. 2007; 6 = Prochaska et al. 2001; 7 = Prochaska et al. 2003a; 8 = Péroux et al. 2008; 9 = Péroux et al. 2006b; 10 = Zych et al. 2009; 11 = Levshakov et al. 2002; 12 = Meiring 2009; 13 = Reimers et al. 2003; 14 = de la Varga et al. 2000; 15 = Quast et al. 2008; 16 = Lu et al. 1996; 17 = Khare et al. 2004; 18 = Meiring et al. 2006; 19 = Jorgenson et al. 2009; 20 = Zhou et al. 2010; 21 = Meiring et al. 2008; 22 = Dessauges-Zavadsky et al. 2006; 23 = Péroux et al. 2006a; 24 = Cui et al. 2005; 25 = Dessauges-Zavadsky et al. 2002; 26 = Dessauges-Zavadsky et al. 2004; 27 = Wild et al. 2006