

System-Plots/3C263_z=0.140756_sys_plot.png

1

Ion	v (km s ⁻¹)	b (km s ⁻¹)	$\log [N \text{ cm}^{-2}]$
Si III	-18 ± 8	35 ± 11	12.39 ± 0.09
C IV	-10 ± 3	33 ± 0	13.71 ± 0.04
O VI	0 ± 2	26 ± 4	13.63 ± 0.04
H I	-14 ± 1	87 ± 10	13.49 ± 0.06
H I	0 ± 1	28 ± 1	14.49 ± 0.02

$N(\text{H I})=13.49$

Excluding O VI : $n_H = -3.88 \pm 0.04$ $Z = 1.06 \pm 0.05$
Including O VI : $n_H = -4.13 \pm 0.02$ $Z = 0.99 \pm 0.04$

Ionisation-Modelling-Plots/3c263-z=0.140756-compI.png

System-Plots/PKS0637-752_z=0.161064_sys_plot.png

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Ion	v (km s ⁻¹)	b (km s ⁻¹)	$\log [N \text{ cm}^{-2}]$
N V	-42.0 ± 6.0	40 ± 9	13.37 ± 0.07
Si III	11.0 ± 4.0	30 ± 7	12.37 ± 0.06
O VI	0.0 ± 3.0	48 ± 5	14.02 ± 0.03
H I	-13.0 ± 2.0	162 ± 21	13.6 ± 0.06
H I	-1.0 ± 1.0	45 ± 1	15.01 ± 0.02

$N(\text{H I})=13.60$

Excluding O VI : $n_H = -4.05 \pm 0.03$ $Z = 1.20 \pm 0.05$
Including O VI : $n_H = -4.12 \pm 0.01$ $Z = 1.30 \pm 0.04$

Ionisation-Modelling-Plots/pks0637-z=0.161064-compI.png

System-Plots/PKS0637-752_z=0.417539_sys_plot.png

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Ion	v (km s ⁻¹)	b (km s ⁻¹)	$\log [N \text{ cm}^{-2}]$
Si III	-5.0 ± 4.0	35 ± 7	12.74 ± 0.06
C III	-4.0 ± 1.0	24 ± 2	14.44 ± 0.15
O VI	0.0 ± 1.0	42 ± 6	14.19 ± 0.05
H I	-17.0 ± 1.0	30 ± 1	15.41 ± 0.03
H I	20.0 ± 1.0	46 ± 4	14.61 ± 0.07

$N(\text{H I})=15.41$

Excluding O VI : $n_H = -3.54 \pm 0.11$ $Z = -0.49 \pm 0.11$
Including O VI : $n_H = -3.74 \pm 0.02$ $Z = -0.23 \pm 0.04$

NOTE : MCMC walkers initialised near the solution for excluding O VI case.

Ionisation-Modelling-Plots/pks0637-z=0.417539-compI.png

System-Plots/PG1424+240_z=0.147104_sys_plot.png

2

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
C IV	-81.0 ± 2.0	11 ± 4	13.58 ± 0.09
C IV	-18.0 ± 2.0	20 ± 3	14.06 ± 0.05
Si III	-78.0 ± 2.0	15 ± 3	12.58 ± 0.05
Si III	-9.0 ± 1.0	16 ± 2	12.87 ± 0.03
Si IV	-82.0 ± 4.0	13 ± 7	12.69 ± 0.1
Si IV	-11.0 ± 2.0	11 ± 5	12.88 ± 0.07
O VI	-56.0 ± 9.0	39 ± 13	13.77 ± 0.11
O VI	4.0 ± 4.0	16 ± 6	13.73 ± 0.11
H I	-454.0 ± 3.0	27 ± 5	13.16 ± 0.05
H I	-87.0 ± 3.0	23 ± 2	14.88 ± 0.05
H I	0.0 ± 3.0	29 ± 2	15.44 ± 0.14
H I	216.0 ± 2.0	40 ± 3	13.49 ± 0.02

N(H I)=15.44

Excluding O VI : $n_H = -3.81 \pm 0.03$ $Z = -0.46 \pm 0.03$
Including O VI : $n_H = -3.88 \pm 0.02$ $Z = -0.42 \pm 0.02$

N(H I)=14.88

Excluding O VI : $n_H = -3.74 \pm 0.05$ $Z = -0.22 \pm 0.04$
Including O VI : $n_H = -3.96 \pm 0.03$ $Z = -0.07 \pm 0.04$

Ionisation-Modelling-Plots/pg1424-z=0.147104-compIII.png

Figure 1: $N(\text{H I})=15.44$

Ionisation-Modelling-Plots/pg1424-z=0.147104-compII.png

Figure 2: $N(\text{H I})=14.88$

System-Plots/PG0003+158_z=0.386089_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	$\log [N \text{ cm}^{-2}]$
O III	-18.0 ± 2.0	9 ± 5	13.93 ± 0.08
C III	-11.0 ± 1.0	13 ± 2	13.35 ± 0.05
N V	-7.0 ± 1.0	33 ± 11	13.49 ± 0.11
O VI	0.0 ± 2.0	25 ± 3	13.87 ± 0.04
O VI	54.0 ± 3.0	25 ± 4	13.71 ± 0.06
H I	-10.0 ± 1.0	29 ± 0	14.81 ± 0.03
H I	40.0 ± 9.0	40 ± 4	14.1 ± 0.05

$N(\text{H I})=14.81$

Excluding O VI : $n_H = -4.12 \pm 0.06$ $Z = -0.65 \pm 0.04$
Including O VI : $n_H = -4.07 \pm 0.02$ $Z = -0.68 \pm 0.03$

Ionisation-Modelling-Plots/pg0003-z=0.386089-compI.png

System-Plots/PG0003+158_z=0.421923_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	$\log [N \text{ cm}^{-2}]$
C III	-9.0 ± 1.0	13 ± 1	13.35 ± 0.04
O III	-1.0 ± 2.0	7 ± 5	13.83 ± 0.13
O VI	0.0 ± 1.0	27 ± 1	14.27 ± 0.02
H I	-272.0 ± 6.0	66 ± 10	13.37 ± 0.05
H I	-16.0 ± 1.0	64 ± 3	14.17 ± 0.04
H I	-2.0 ± 1.0	26 ± 1	14.71 ± 0.02

$N(\text{H I})=14.17$

Excluding O VI : $n_H = -2.66 \pm 0.22$ $Z = 0.42 \pm 0.23$

Including O VI : $n_H = -4.24 \pm 0.02$ $Z = -0.09 \pm 0.03$

NOTE : Convergence is not good for excluding O VI case

Ionisation-Modelling-Plots/pg0003-z=0.421923-compII.png

System-Plots/PG1216+069_z=0.282286_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
Si III	0.0 ± 1.0	14 ± 3	12.92 ± 0.05
C III	-51.0 ± 3.0	32 ± 5	13.33 ± 0.05
C III	5.0 ± 1.0	16 ± 2	13.76 ± 0.07
O VI	-64.0 ± 6.0	58 ± 9	13.93 ± 0.05
O VI	19.0 ± 2.0	12 ± 5	13.54 ± 0.09
H I	-31.0 ± 1.0	52 ± 3	15.1 ± 0.05
H I	7.0 ± 1.0	22 ± 1	16.4 ± 0.03
H I	169.0 ± 22.0	53 ± 10	13.15 ± 0.18

N(H I)=15.10

Excluding O VI : $n_H = -2.13 \pm 0.15$ $Z = 0.65 \pm 0.22$
Including O VI : $n_H = -3.86 \pm 0.02$ $Z = -0.37 \pm 0.03$

NOTE : Convergence is not much good for excluding O VI case

N(H I)=16.40

Excluding O VI : $n_H = -2.08 \pm 0.43$ $Z = -0.37 \pm 0.59$
Including O VI : $n_H = -3.68 \pm 0.02$ $Z = -1.55 \pm 0.04$

NOTE : Convergence is not much good for excluding O VI case

Ionisation-Modelling-Plots/pg1216-z=0.282286-compI.png

Figure 3: $N(\text{H I})=15.10$

Ionisation-Modelling-Plots/pg1216-z=0.282286-compII.png

Figure 4: $N(\text{H I})=16.40$

System-Plots/SDSSJ135712.61+170444_z=0.097869_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
Si III	-62.0 ± 2.0	17 ± 3	12.94 ± 0.05
Si III	4.0 ± 1.0	13 ± 10	14.67 ± 2.87
C IV	-74.0 ± 6.0	33 ± 1	13.82 ± 0.09
C IV	-7.0 ± 8.0	32 ± 12	13.63 ± 0.12
Si IV	-66.0 ± 4.0	18 ± 6	13.02 ± 0.08
Si IV	0.0 ± 4.0	29 ± 5	13.3 ± 0.05
C II	-79.0 ± 8.0	19 ± 14	13.17 ± 0.16
C II	-1.0 ± 2.0	22 ± 3	13.92 ± 0.04
O VI	-96.0 ± 10.0	43 ± 16	14.3 ± 0.11
H I	-536.0 ± 3.0	29 ± 5	13.36 ± 0.05
H I	-66.0 ± 0.0	29 ± 8	16.49 ± 0.12
H I	0.0 ± 0.0	46 ± 4	15.01 ± 0.16
H I	424.0 ± 3.0	34 ± 4	13.52 ± 0.04

N(H I)=16.49

Excluding O VI : $n_H = -3.76 \pm 0.05$ $Z = -1.49 \pm 0.04$
Including O VI : $n_H = -4.06 \pm 0.02$ $Z = -1.32 \pm 0.04$

N(H I)=15.01

Excluding O VI : $n_H = -3.25 \pm 0.04$ $Z = 0.93 \pm 0.04$
Including O VI : $n_H = -3.84 \pm 0.03$ $Z = 0.75 \pm 0.03$

NOTE : Using O VI column density from other component to compare.

Ionisation-Modelling-Plots/s135712-z=0.097869-compII.png

Figure 5: $N(\text{H I})=16.49$

Ionisation-Modelling-Plots/s135712-z=0.097869-compIII.png

Figure 6: $N(\text{H I})=15.01$

System-Plots/1ES1553+113_z=0.187764_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
C III	-46.0 ± 1.0	5 ± 4	13.17 ± 0.46
C III	-6.0 ± 1.0	13 ± 2	13.21 ± 0.03
N V	-47.0 ± 2.0	17 ± 0	13.43 ± 0.05
N V	-5.0 ± 2.0	16 ± 4	13.33 ± 0.06
O VI	-42.0 ± 1.0	3 ± 1	14.23 ± 0.33
O VI	0.0 ± 1.0	15 ± 3	13.71 ± 0.03
O VI	511.0 ± 3.0	28 ± 5	13.49 ± 0.05
H I	-52.0 ± 3.0	8 ± 6	12.76 ± 0.15
H I	-28.0 ± 1.0	51 ± 1	13.88 ± 0.01
H I	425.0 ± 3.0	25 ± 5	13.02 ± 0.07
H I	496.0 ± 2.0	37 ± 3	13.46 ± 0.03

N(H I)=12.76

Excluding O VI : $n_H = -4.62 \pm 0.04$ $Z = 1.37 \pm 0.06$
Including O VI : $n_H = -4.63 \pm 0.03$ $Z = 1.37 \pm 0.06$

NOTE : Reference metallicity at log Z = 1. Low N(H I), and error for column density for C III and O VI for component I were obtained from χ^2 , else they were large and convergence was not good. Nearly similar solution for both the cases.

N(H I)=13.88

Excluding O VI : $n_H = -4.6 \pm 0.04$ $Z = 0.03 \pm 0.03$
Including O VI : $n_H = -4.44 \pm 0.02$ $Z = -0.06 \pm 0.02$

Ionisation-Modelling-Plots/1es1553-z=0.187764-compI.png

Figure 7: $N(\text{H I})=12.76$

Ionisation-Modelling-Plots/1es1553-z=0.187764-compII.png

Figure 8: $N(\text{H I})=13.88$

System-Plots/SBS1108+560_z=0.463207_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
O I	25.0 ± 2.0	18 ± 4	14.13 ± 0.05
Si III	-23.0 ± 9.0	39 ± 12	13.26 ± 0.12
Si III	21.0 ± 2.0	13 ± 15	14.61 ± 0.24
C II	12.0 ± 9.0	31 ± 4	14.15 ± 0.05
C II	34.0 ± 2.0	12 ± 5	14.67 ± 0.1
C III	-48.0 ± 3.0	15 ± 1	13.66 ± 0.08
C III	-10.0 ± 3.0	26 ± 7	14.16 ± 0.07
C III	28.0 ± 3.0	24 ± 1	13.95 ± 0.05
N III	-22.0 ± 59.0	67 ± 61	13.77 ± 0.1
N III	32.0 ± 2.0	26 ± 4	14.49 ± 0.09
Si II	25.0 ± 1.0	15 ± 1	13.57 ± 0.08
O VI	0.0 ± 6.0	45 ± 10	13.71 ± 0.07
H I	-48.0 ± 0.0	22 ± 2	15.77 ± 0.02
H I	-10.0 ± 2.0	16 ± 0	15.79 ± 0.11
H I	28.0 ± 1.0	16 ± 1	18.1 ± 0.12

N(H I)=18.10

Excluding O VI : $n_H = -1.88 \pm 0.03$ $Z = 1.07 \pm 0.04$

Including O VI : $n_H = -2.83 \pm 0.02$ $Z = 0.89 \pm 0.03$

NOTE : Using O VI from other component to compare

N(H I)=15.79

Excluding O VI : $n_H = -2.65 \pm 0.22$ $Z = 1.6 \pm 0.22$

Including O VI : $n_H = -3.56 \pm 0.03$ $Z = 1.16 \pm 0.05$

NOTE : log Z is around 1 in both the components.

Ionisation-Modelling-Plots/sbs1108-z=0.463207-compIII.png

Figure 9: $N(\text{H I})=18.10$

Ionisation-Modelling-Plots/sbs1108-z=0.463207-compII.png

Figure 10: $N(\text{H I})=15.79$

System-Plots/PG1222+216_z=0.378389_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
O III	7.0 ± 5.0	61 ± 8	14.51 ± 0.04
Si III	0.0 ± 2.0	30 ± 3	12.98 ± 0.03
C III	-261.0 ± 3.0	17 ± 5	13.54 ± 0.06
C III	-215.0 ± 5.0	22 ± 6	13.4 ± 0.08
C III	0.0 ± 2.0	32 ± 3	13.79 ± 0.02
C III	63.0 ± 3.0	13 ± 6	13.12 ± 0.07
O VI	-439.0 ± 3.0	28 ± 5	13.42 ± 0.06
O VI	-264.0 ± 6.0	24 ± 6	13.75 ± 0.2
O VI	-223.0 ± 14.0	34 ± 13	13.68 ± 0.24
O VI	-24.0 ± 12.0	14 ± 18	13.0 ± 0.11
O VI	13.0 ± 4.0	29 ± 13	13.95 ± 0.16
O VI	59.0 ± 6.0	18 ± 7	13.42 ± 0.23
H I	-455.0 ± 3.0	26 ± 4	13.4 ± 0.06
H I	-353.0 ± 9.0	64 ± 19	13.54 ± 0.11
H I	-268.0 ± 1.0	16 ± 6	13.7 ± 0.14
H I	-227.0 ± 5.0	52 ± 4	14.34 ± 0.05
H I	-27.0 ± 2.0	23 ± 1	14.73 ± 0.08
H I	31.0 ± 2.0	43 ± 1	15.43 ± 0.04

N(H I)=15.43

Excluding O VI : $n_H = -2.66 \pm 0.05$ $Z = 1.75 \pm 0.06$
Including O VI : $n_H = -3.16 \pm 0.03$ $Z = 1.34 \pm 0.02$

Ionisation-Modelling-Plots/pg1222-z=0.378389-compVI.png

System-Plots/PG1116+215_z=0.138527_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
N V	-7.0 ± 3.0	12 ± 6	12.84 ± 0.09
N II	-5.0 ± 1.0	6 ± 3	13.62 ± 0.11
N II	33.0 ± 6.0	8 ± 13	12.85 ± 0.15
P II	-44.0 ± 5.0	19 ± 8	12.94 ± 0.09
Si II	-13.0 ± 0.0	9 ± 1	12.46 ± 0.06
Si II	13.0 ± 0.0	23 ± 3	12.31 ± 0.04
Si III	-9.0 ± 1.0	10 ± 1	12.92 ± 0.04
Si IV	-13.0 ± 2.0	4 ± 3	12.84 ± 0.09
O VI	-1.0 ± 0.0	35 ± 3	13.84 ± 0.02
C IV	-10.0 ± 3.0	13 ± 4	13.17 ± 0.07
C II	-7.0 ± 1.0	9 ± 1	13.85 ± 0.04
H I	-8.0 ± 3.0	27 ± 2	14.97 ± 0.05
H I	-5.0 ± 9.0	71 ± 14	13.6 ± 0.23
H I	31.0 ± 2.0	6 ± 2	16.04 ± 1.77

N(H I)=13.60

Excluding O VI : $n_H = -3.64 \pm 0.01$ $Z = 2.0 \pm 0.0$

Including O VI : $n_H = -4.23 \pm 0.01$ $Z = 2.0 \pm 0.0$

NOTE : logZ coming to be 2 for both the components

Ionisation-Modelling-Plots/pg1116-z=0.138527-compI.png

Figure 11: $N(\text{H I})=14.97$

Ionisation-Modelling-Plots/pg1116-z=0.138527-compII.png

Figure 12: $N(\text{H I})=13.60$

System-Plots/H1821+643_z=0.170006_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
Si III	7.0 ± 3.0	17 ± 5	12.05 ± 0.07
Si III	52.0 ± 6.0	14 ± 10	11.62 ± 0.17
N V	47.0 ± 3.0	31 ± 5	13.29 ± 0.05
N V	122.0 ± 7.0	21 ± 11	12.74 ± 0.14
O VI	3.0 ± 28.0	152 ± 20	13.94 ± 0.06
O VI	107.0 ± 9.0	48 ± 12	13.29 ± 0.11
H I	-92.0 ± 0.0	36 ± 1	13.85 ± 0.02
H I	0.0 ± 2.0	63 ± 3	13.68 ± 0.02
H I	120.0 ± 1.0	28 ± 1	13.35 ± 0.02

N(H I)= 13.68

Excluding O VI : $n_H = -4.10 \pm 0.02$ $Z = 0.91 \pm 0.04$
Including O VI : $n_H = -4.14 \pm 0.02$ $Z = 0.94 \pm 0.04$

NOTE : logZ near 1, needs to be done with log Zref=1.

N(H I)= 13.35

Excluding O VI : $n_H = -4.07 \pm 0.06$ $Z = 0.75 \pm 0.11$
Including O VI : $n_H = -4.11 \pm 0.05$ $Z = 0.79 \pm 0.10$

Ionisation-Modelling-Plots/h1821-z=0.170006-compII.png

Figure 13: $N(\text{H I})=13.68$

Ionisation-Modelling-Plots/h1821-z=0.170006-compIII.png

Figure 14: $N(\text{H I})=13.35$

System-Plots/PG1121+422_z=0.192393_sys_plot.png

Ion	v (km s ⁻¹)	b (km s ⁻¹)	log [N cm ⁻²]
Si III	-11.0 ± 13.0	10 ± 3	12.62 ± 0.10
Si III	9.0 ± 13.0	18 ± 4	13.14 ± 0.04
C III	-26.0 ± 10.0	10 ± 7	13.04 ± 0.09
C III	8.0 ± 5.0	18 ± 6	13.74 ± 0.11
C II	-9.0 ± 3.0	17 ± 5	13.69 ± 0.08
C II	9.0 ± 2.0	16 ± 3	13.93 ± 0.05
Si IV	10.0 ± 7.0	22 ± 11	12.86 ± 0.13
Si II	-3.0 ± 1.0	15 ± 2	13.04 ± 0.06
Si II	27.0 ± 19.0	42 ± 1	12.48 ± 0.23
O VI	-7.0 ± 13.0	11 ± 16	12.84 ± 0.19
O VI	20.0 ± 3.0	3 ± 4	13.37 ± 0.12
H I	1.0 ± 2.0	60 ± 6	14.34 ± 0.09
H I	5.0 ± 0.0	19 ± 0	17.7 ± 0.11

N(H I)=14.34

Excluding O VI : $n_H = -1.78 \pm 0.05$ $Z = 1.97 \pm 0.04$
Including O VI : $n_H = -3.00 \pm 0.04$ $Z = 1.25 \pm 0.04$

NOTE : logZ coming 1.25 and nearly 2, so needs to be looked at.

N(H I)= 17.70

Excluding O VI : $n_H = -2.35 \pm 0.05$ $Z = -1.66 \pm 0.06$
Including O VI : $n_H = -3.08 \pm 0.04$ $Z = -2.08 \pm 0.05$

NOTE : Since very high N(H I), so low metallicity. And solutions aren't much good.

Ionisation-Modelling-Plots/pg1121-z=0.192393-compI.png

Figure 15: $N(\text{H I})=14.34$

Ionisation-Modelling-Plots/pg1121-z=0.192393-compII.png

Figure 16: $N(\text{H I})=17.70$