

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

N(HI)=13.49

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

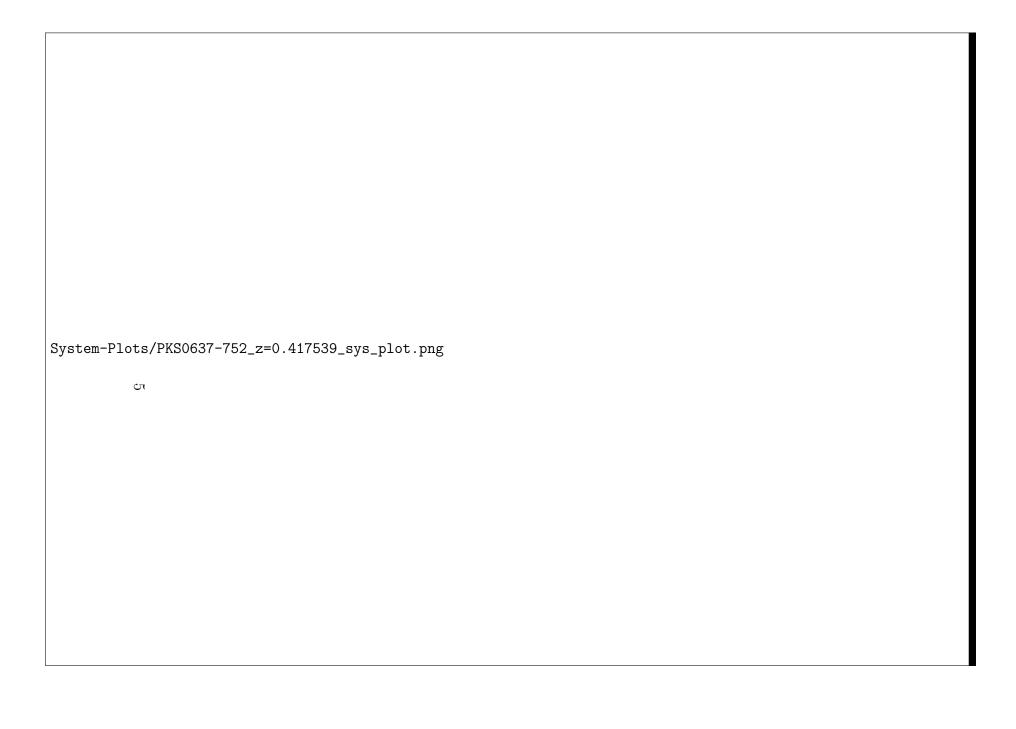
Ionisation-Modelling-Plots/3c263-z=0.140756-compI.png



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

N(HI)=13.60

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

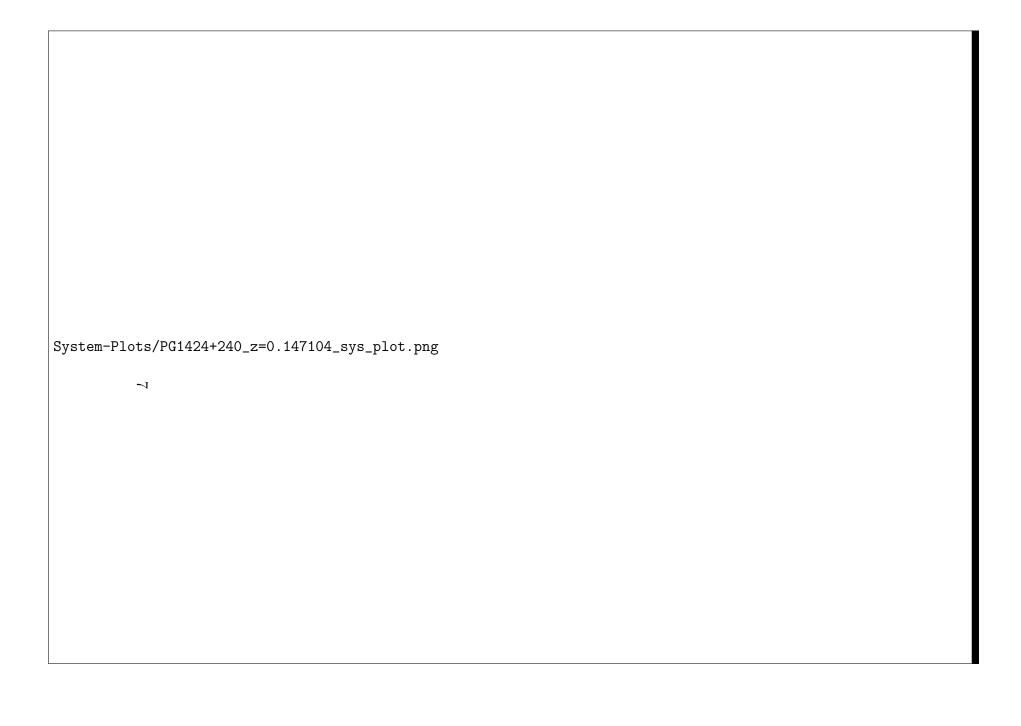


Ion	$ m v~(km~s^{-1})$	$\mathrm{b}~(\mathrm{km}~\mathrm{s}^{-1})$	$\log~[{ m N~cm^{-2}}]$
Si III C III O VI H I H I	-5.0 ± 4.0 -4.0 ± 1.0 0.0 ± 1.0 -17.0 ± 1.0 20.0 ± 1.0	35 ± 7 24 ± 2 42 ± 6 30 ± 1 46 ± 4	12.74 ± 0.06 14.44 ± 0.15 14.19 ± 0.05 15.41 ± 0.03 14.61 ± 0.07

N(HI)=15.41

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

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



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

N(HI)=15.44

$$N(HI) = 14.88$$

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



Figure 1: N(H I)=15.44

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

Figure 2: N(H I)=14.88

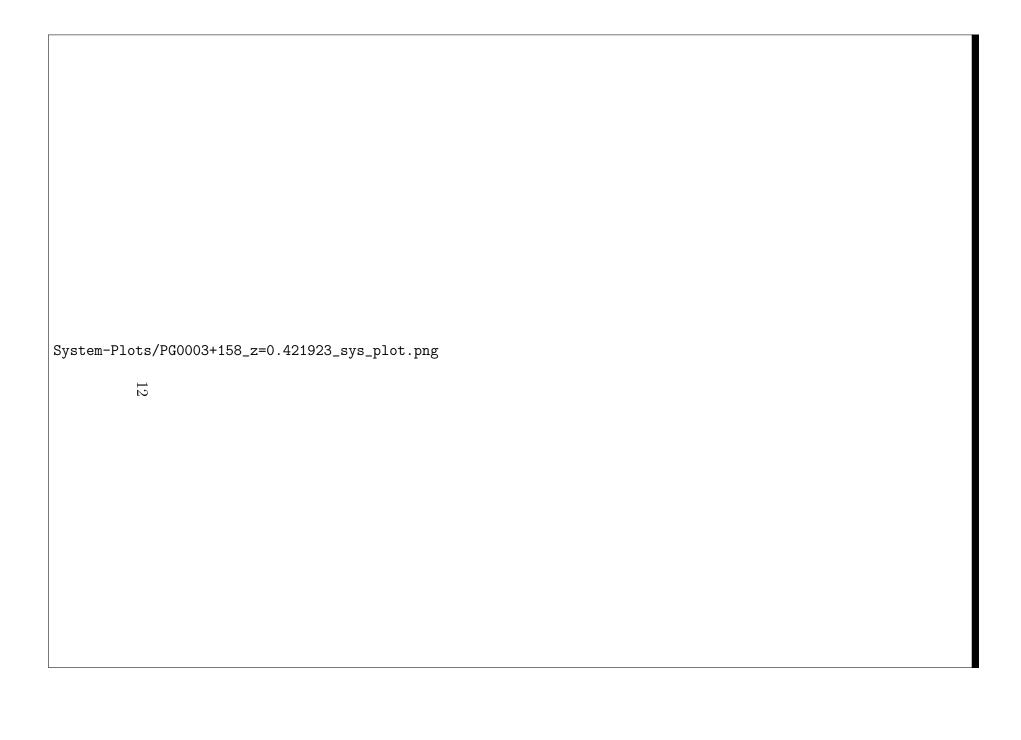


Ion	${ m v}~{ m (km~s^{-1})}$	$\mathrm{b}~\mathrm{(km~s^{-1})}$	$\log~[{ m N~cm^{-2}}]$
OIII	-18.0 ± 2.0	9 ± 5	13.93 ± 0.08
$\mathrm{C}\mathrm{III}$	-11.0 ± 1.0	13 ± 2	13.35 ± 0.05
Nv	-7.0 ± 1.0	33 ± 11	13.49 ± 0.11
Ovi	0.0 ± 2.0	25 ± 3	13.87 ± 0.04
Ovi	54.0 ± 3.0	25 ± 4	13.71 ± 0.06
Ηι	-10.0 ± 1.0	29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

N(HI)=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



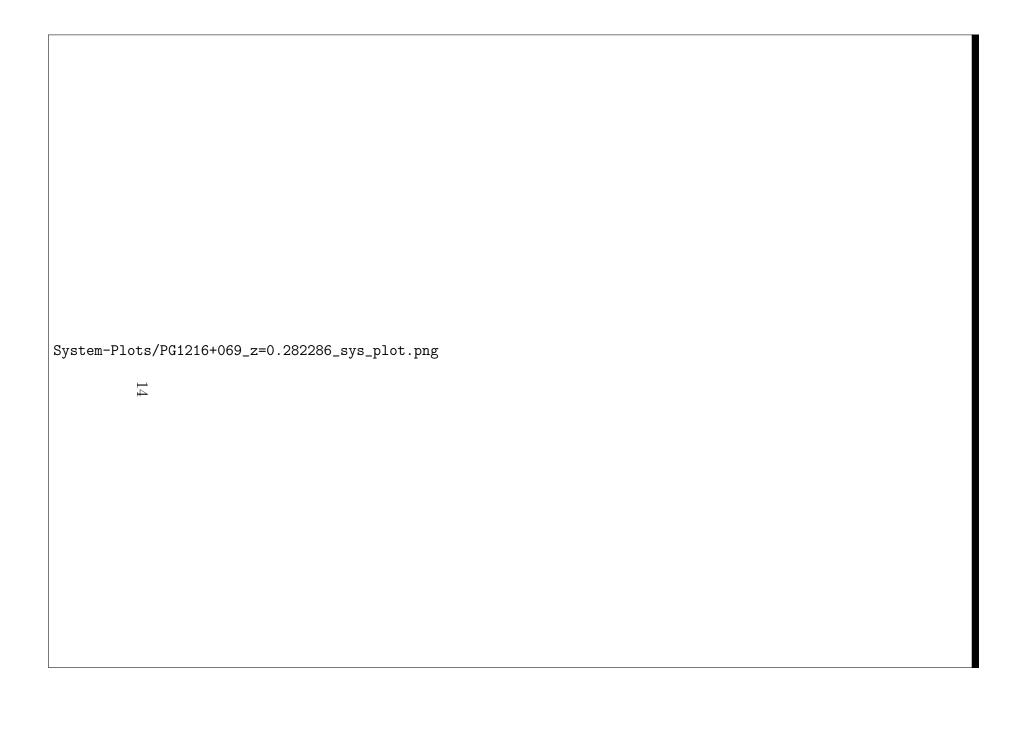
Ion	${ m v}~({ m km~s^{-1}})$	$\mathrm{b}~(\mathrm{km}~\mathrm{s}^{-1})$	$\log~[{ m N~cm^{-2}}]$
CIII OIII OVI HI HI	-9.0 ± 1.0 -1.0 ± 2.0 0.0 ± 1.0 -272.0 ± 6.0 -16.0 ± 1.0 -2.0 ± 1.0	13 ± 1 7 ± 5 27 ± 1 66 ± 10 64 ± 3 26 ± 1	13.35 ± 0.04 13.83 ± 0.13 14.27 ± 0.02 13.37 ± 0.05 14.17 ± 0.04 14.71 ± 0.02

N(HI)=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



Ion	$v~(km~s^{-1})$	$\mathrm{b}~(\mathrm{km}~\mathrm{s}^{-1})$	$\log~[{ m N~cm^{-2}}]$
G:	0.0 1.0	14 0	10.00 0.05
Si III	0.0 ± 1.0	14 ± 3	12.92 ± 0.05
$\mathrm{C}\mathrm{iii}$	-51.0 ± 3.0	32 ± 5	13.33 ± 0.05
$\mathrm{C}{}_{\mathrm{III}}$	5.0 ± 1.0	16 ± 2	13.76 ± 0.07
Ovi	-64.0 ± 6.0	58 ± 9	13.93 ± 0.05
Ovi	19.0 ± 2.0	12 ± 5	13.54 ± 0.09
Ηι	-31.0 ± 1.0	52 ± 3	15.1 ± 0.05
Ηι	7.0 ± 1.0	22 ± 1	16.4 ± 0.03
Ηι	169.0 ± 22.0	53 ± 10	13.15 ± 0.18

N(HI)=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

$$N(HI) = 16.40$$

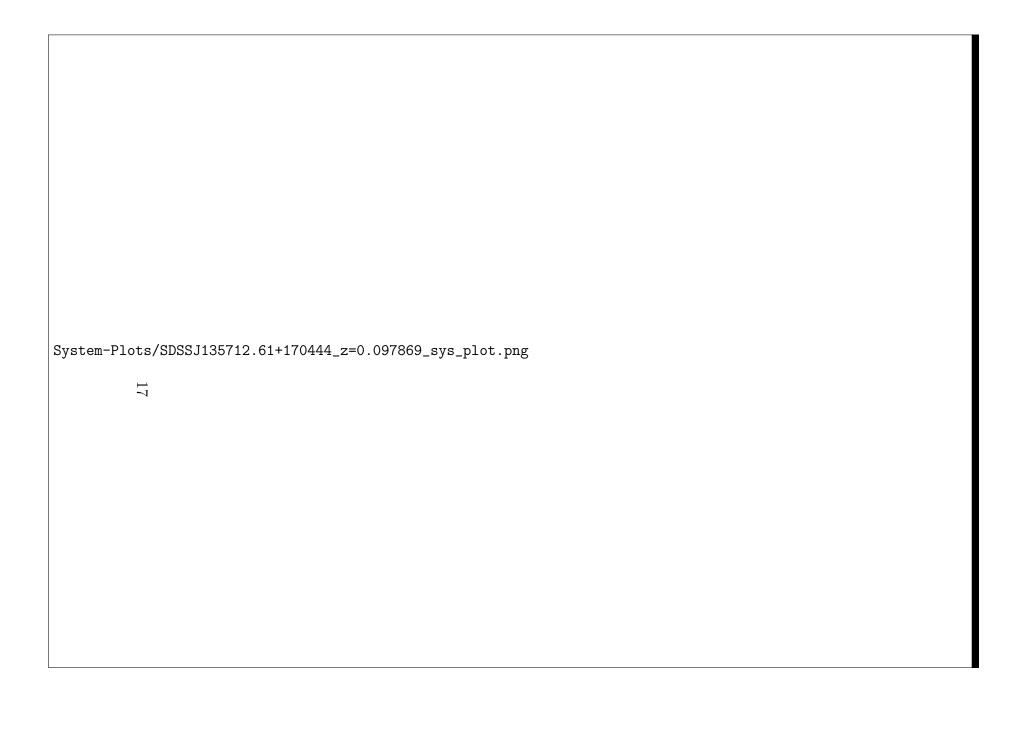
NOTE : Convergence is not much good for excluding O VI case



Figure 3: N(HI)=15.10

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

Figure 4: N(H I)=16.40



Ion	$v~(km~s^{-1})$	$\mathrm{b}~(\mathrm{km}~\mathrm{s}^{-1})$	$\log~[\rm N~cm^{-2}]$
Si III	-62.0 ± 2.0	17 ± 3	12.94 ± 0.05
Si III	4.0 ± 1.0	13 ± 10	14.67 ± 2.87
$\mathrm{C}\mathrm{iv}$	-74.0 ± 6.0	33 ± 1	13.82 ± 0.09
$\mathrm{C}\mathrm{iv}$	-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
$\mathrm{C}{}_{\mathrm{II}}$	-79.0 ± 8.0	19 ± 14	13.17 ± 0.16
$\mathrm{C}{}_{\mathrm{II}}$	-1.0 ± 2.0	22 ± 3	13.92 ± 0.04
Ovi	-96.0 ± 10.0	43 ± 16	14.3 ± 0.11
Ηι	-536.0 ± 3.0	29 ± 5	13.36 ± 0.05
Ηι	-66.0 ± 0.0	29 ± 8	16.49 ± 0.12
Ηι	0.0 ± 0.0	46 ± 4	15.01 ± 0.16
Ηι	424.0 ± 3.0	34 ± 4	13.52 ± 0.04

N(HI) = 16.49

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

$$N(HI) = 15.01$$

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

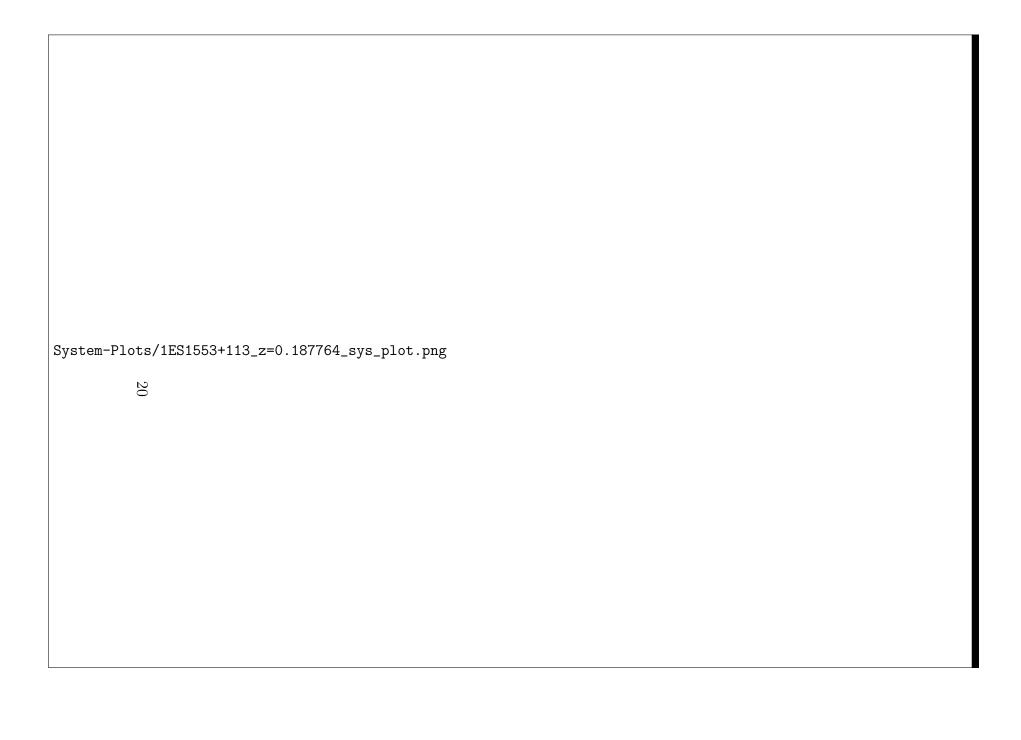
NOTE: Using O VI column density from other component to compare.



Figure 5: N(H I)=16.49

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

Figure 6: N(H I)=15.01



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