



Reionization with metal absorption lines' statistics

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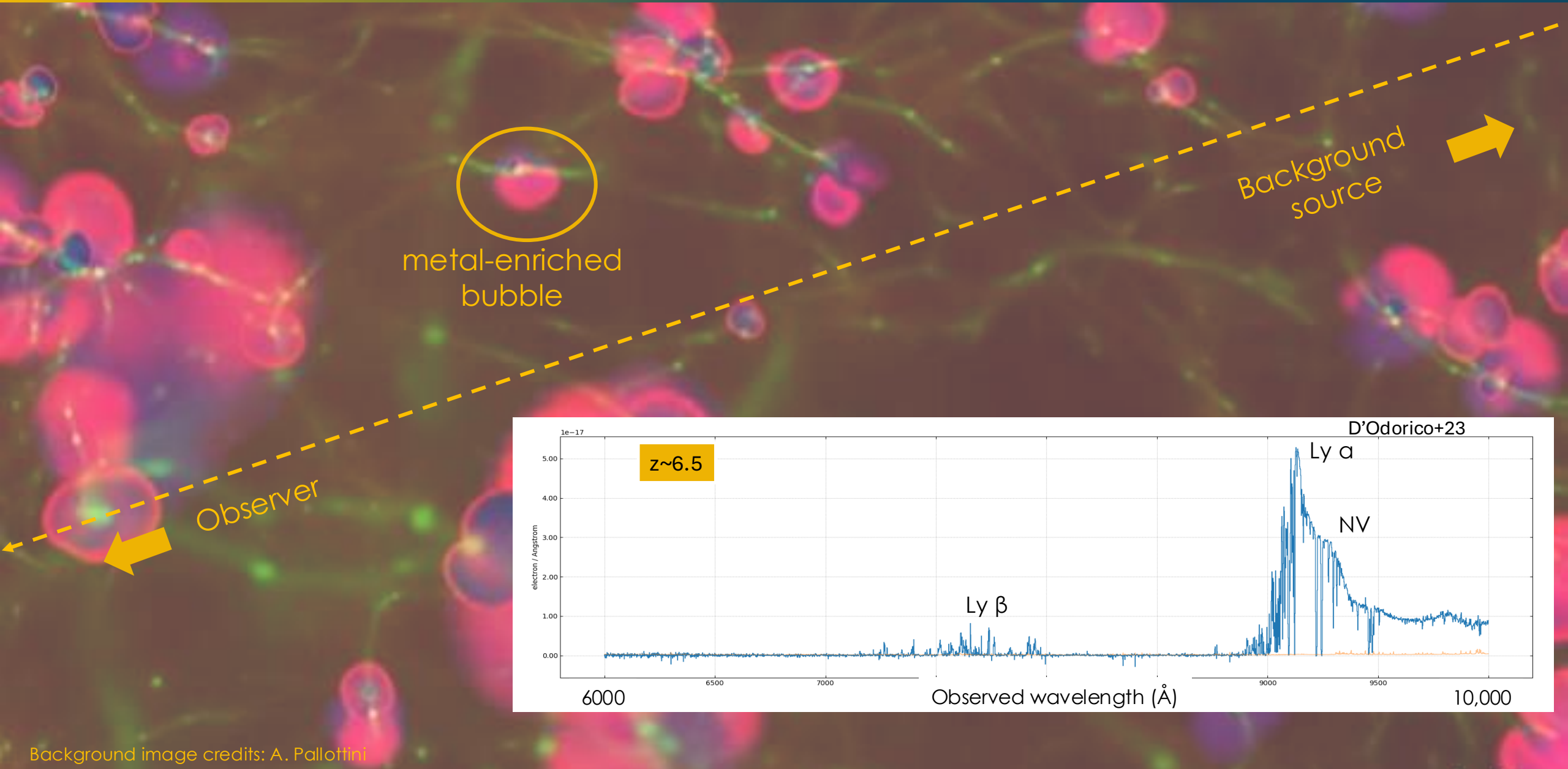


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the European Union



European Research Council
Established by the European Commission

Quasar Absorption Spectroscopy



The E-XQR-30 sample



XQR-30 survey (P.I. D'Odorico) +
12 XSHOOTER archive spectra

Average 8.3h per source

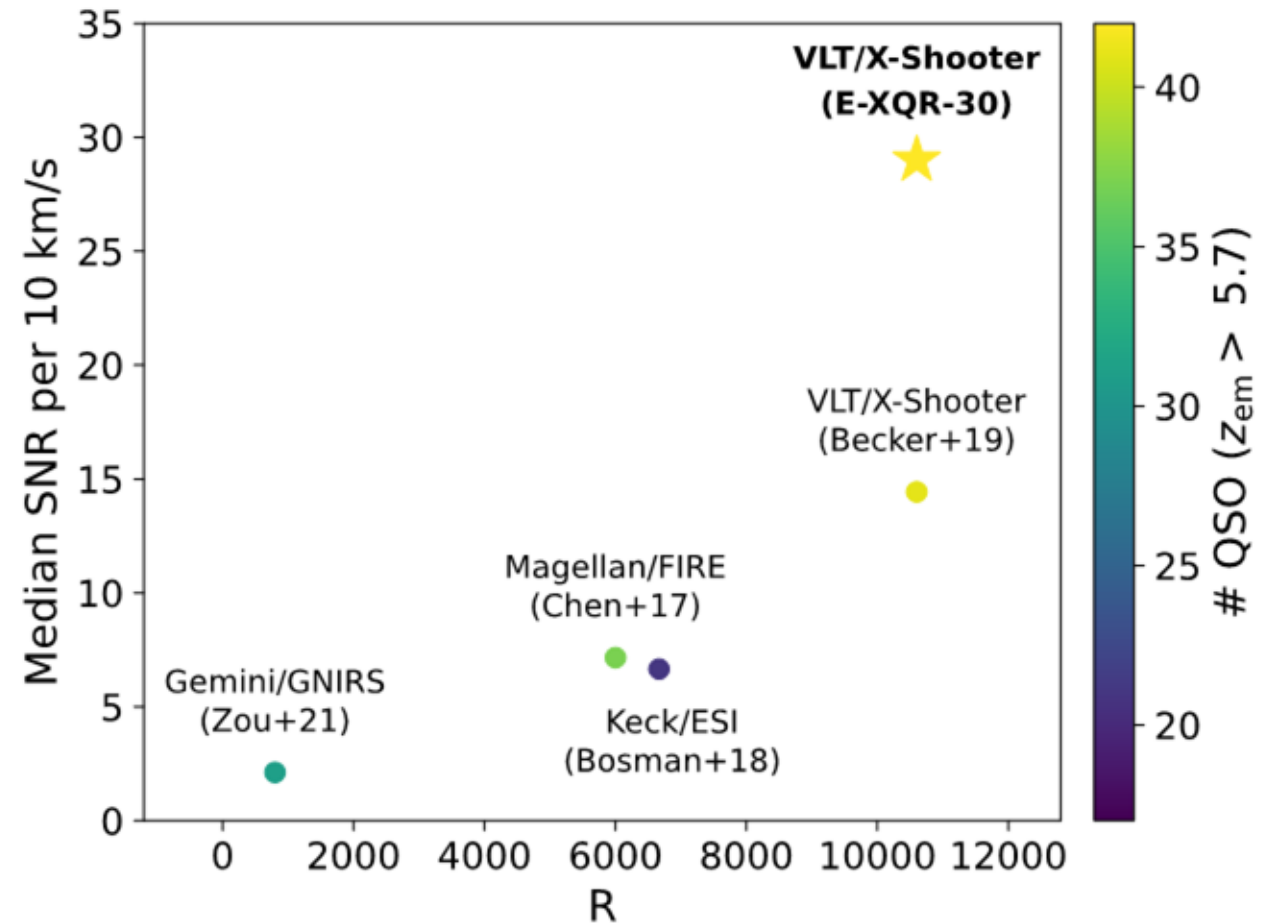
Emission redshift $5.8 < z < 6.6$

$R_{\text{VIS}} \sim 11400$ $R_{\text{NIR}} \sim 9800$

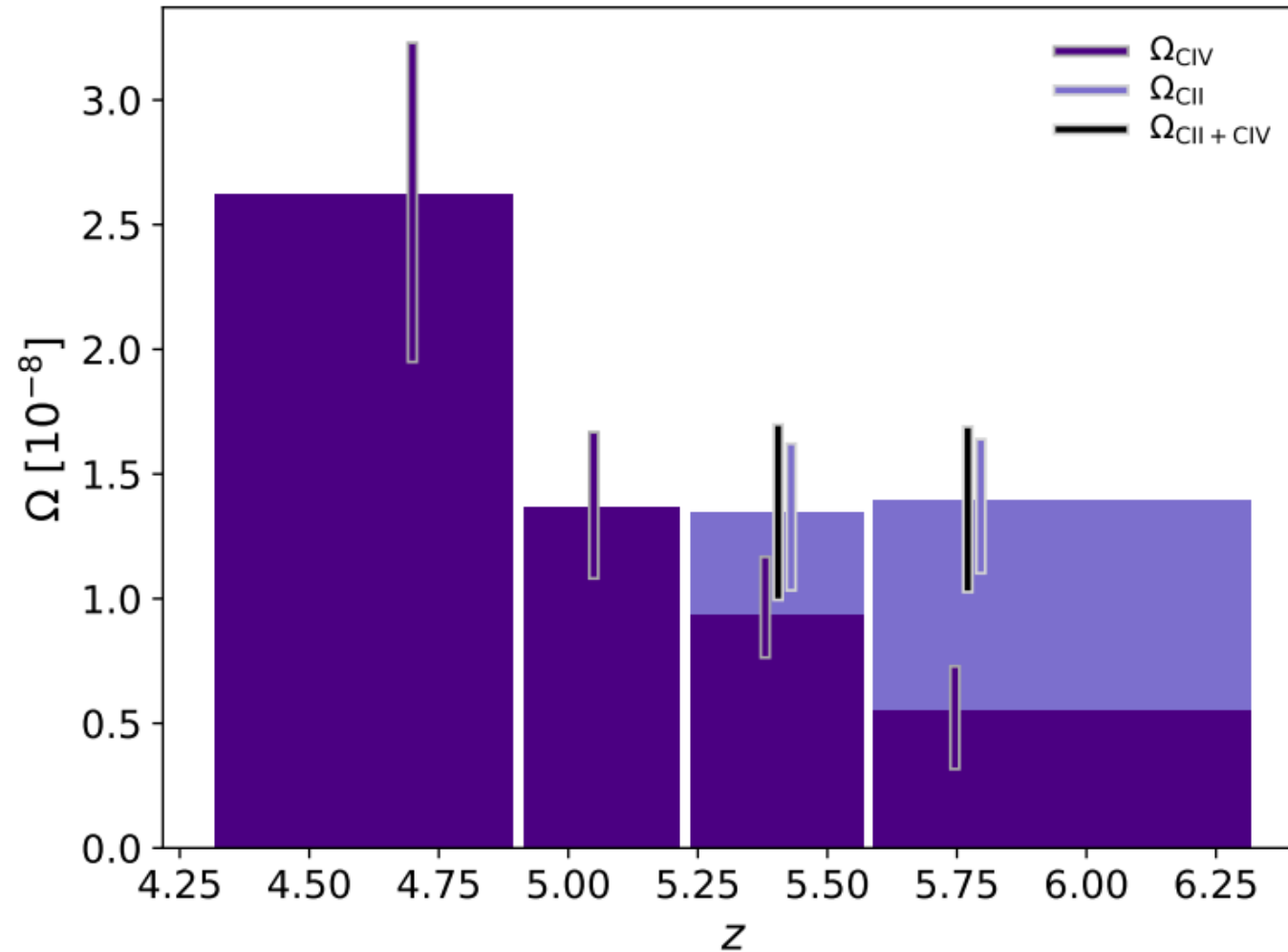
Median S/N ~ 29 per 10km/s pixel

ALMA ([C II]) and MUSE parallel programmes

Presentation paper
D'Odorico et al. 2023



Cosmic mass density of C IV & C II



This information is getting closer to the cosmic mass evolution of C that we get from simulations

No info on C III

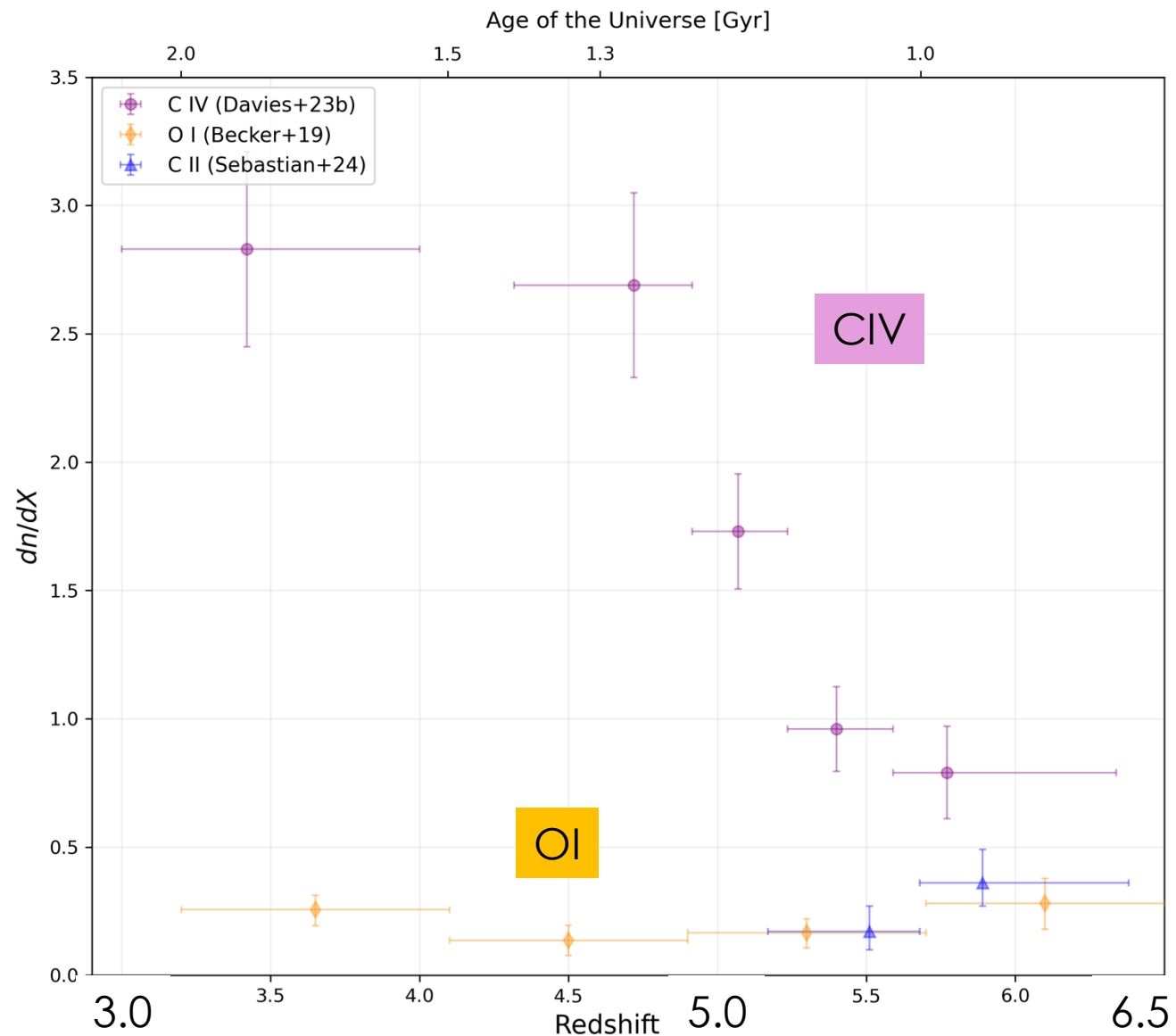
Evolution of Si IV and Si II



Number
Density

$3 < z < 6.5$

D'Odorico et al.
in prep.



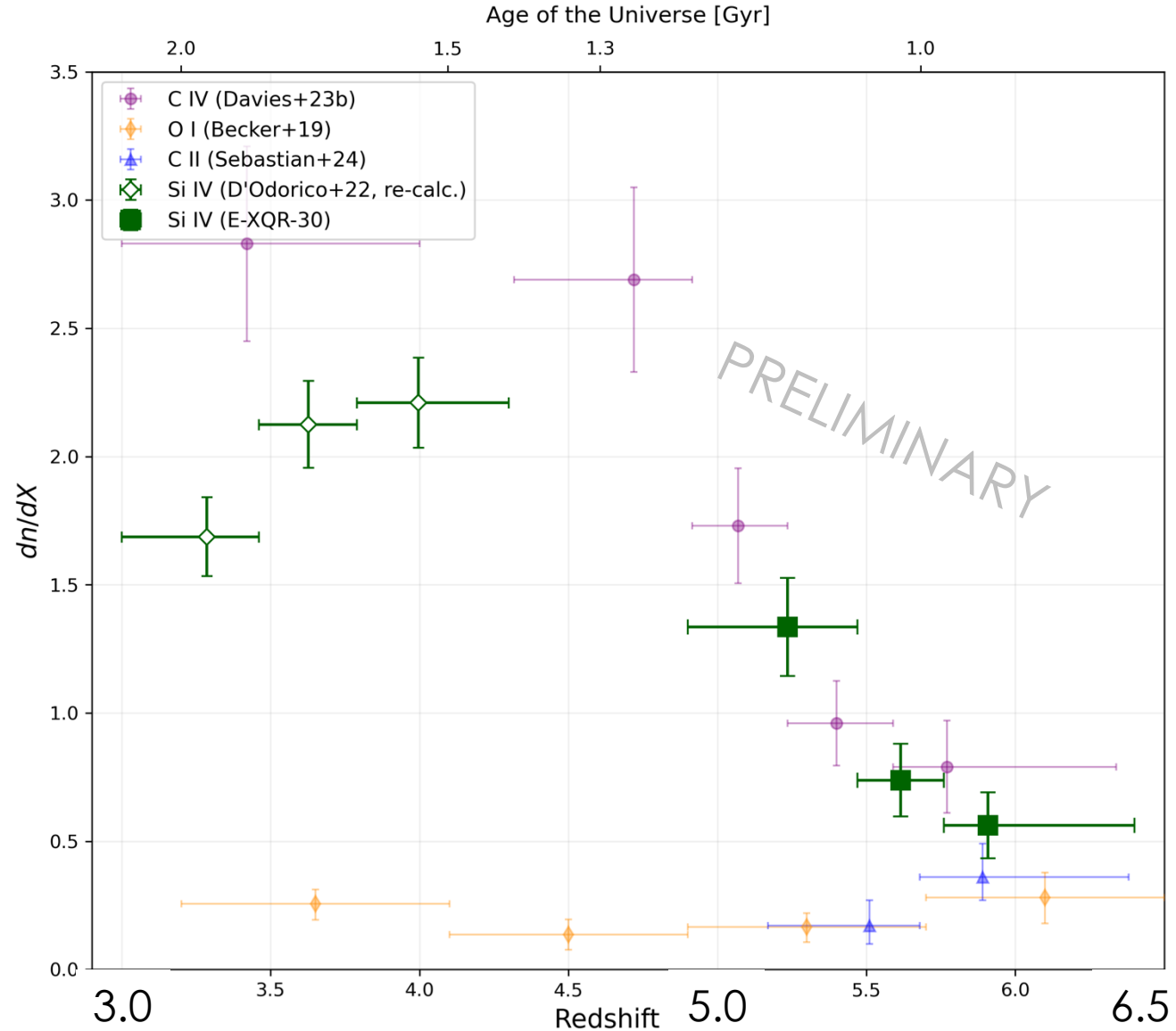
Evolution of Si IV and Si II



Number
Density

$3 < z < 6.5$

D'Odorico et al.
in prep.



- Si IV E- XQR-30
- ◇ Si IV XQ-100

$\log N(\text{SiIV}) \geq 12.5$
with completeness corr.

Evolution of Si IV and Si II

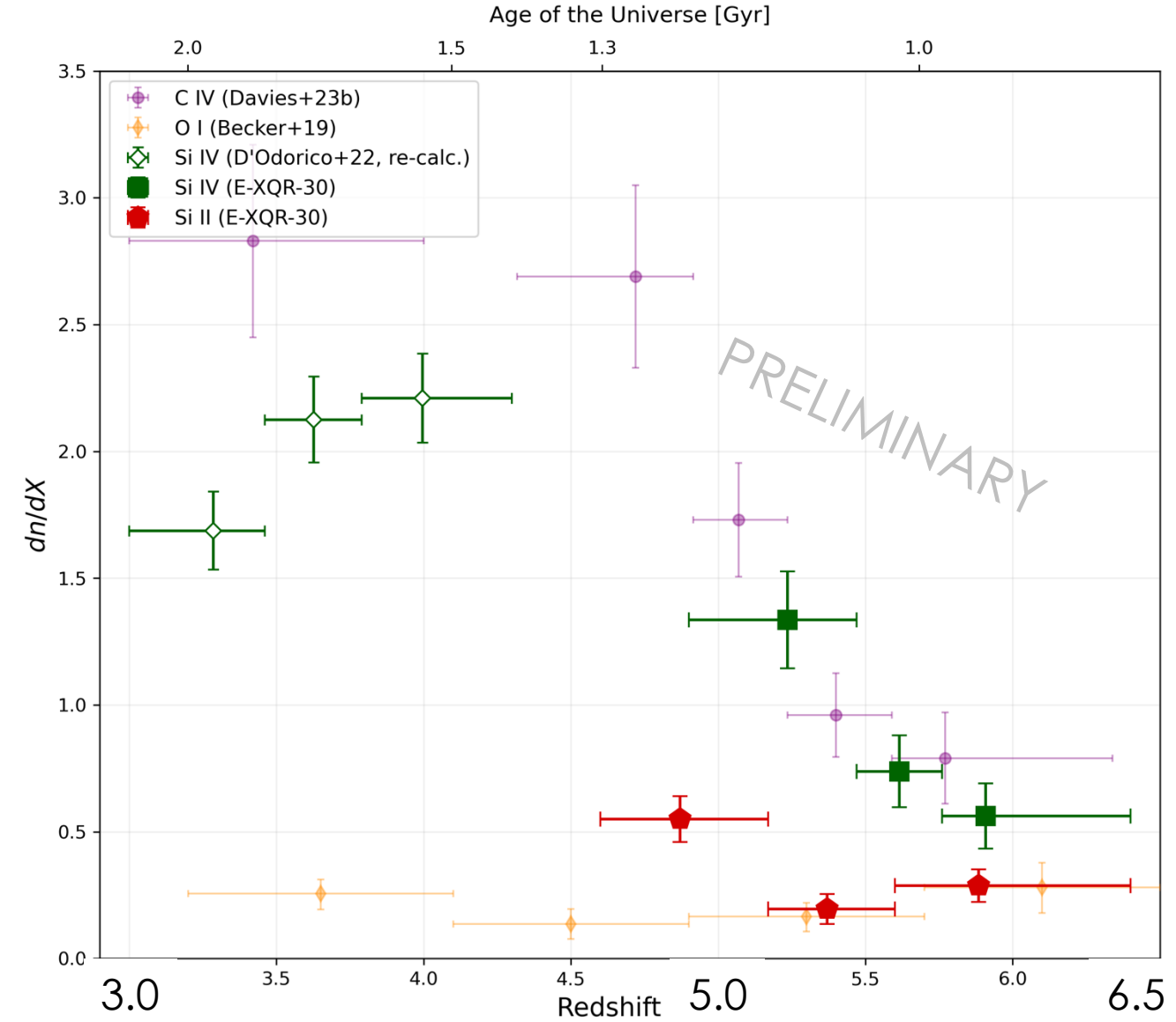


Number Density

$3 < z < 6.5$

D'Odorico et al.
in prep.

Si II i.p. 16.34 eV
C II i.p. 24.38 eV



- Si IV E- XQR-30
- ◇ Si IV XQ-100
- ▾ Si II E-XQR-30

$\log N(\text{SiII}) \geq 13.0$
corrected

Si II start rising
much before OI

WHY?

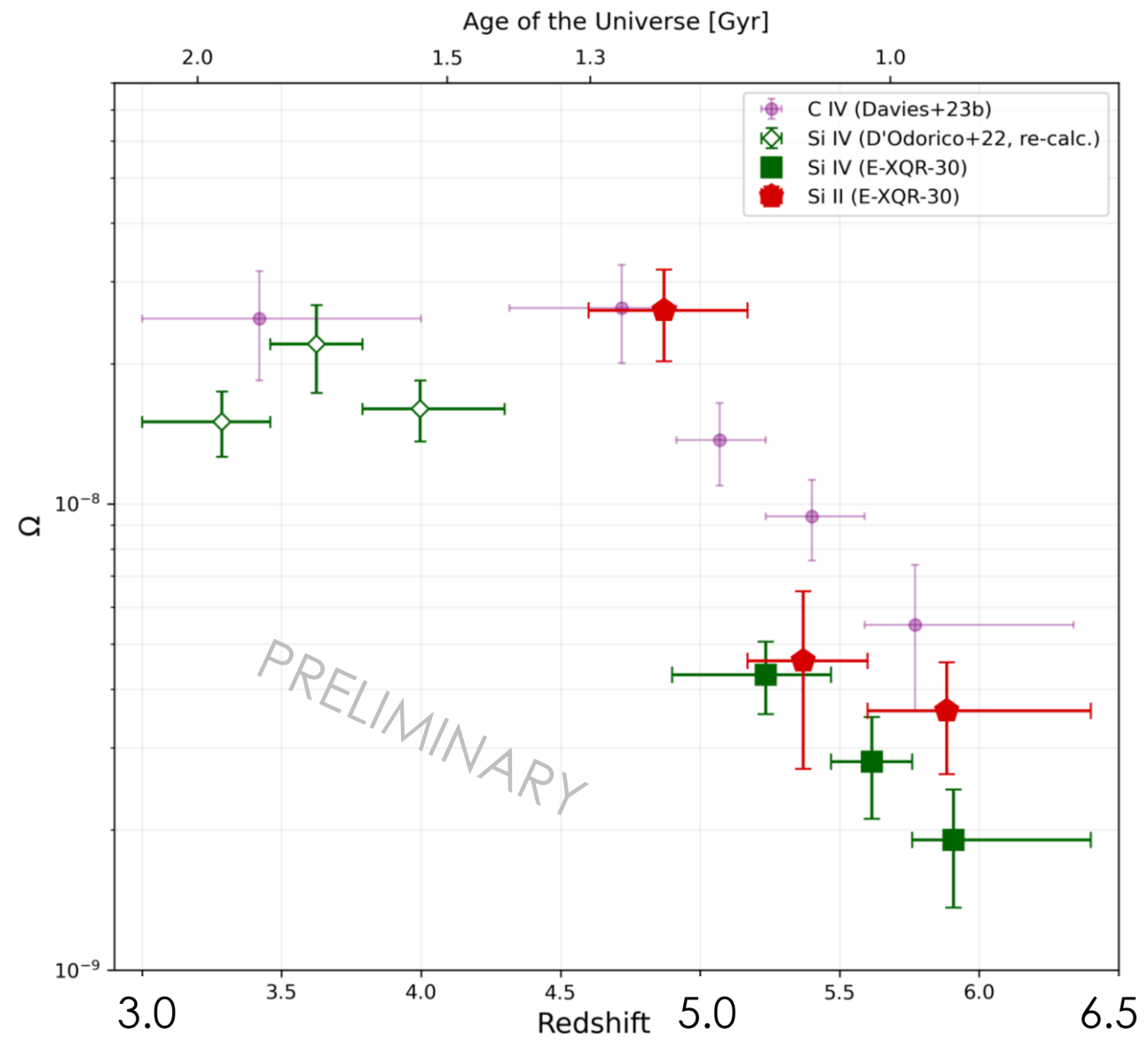
Evolution of Si IV and Si II



Cosmic
Mass
Density

$3 < z < 6.5$

D'Odorico et al.
in prep.



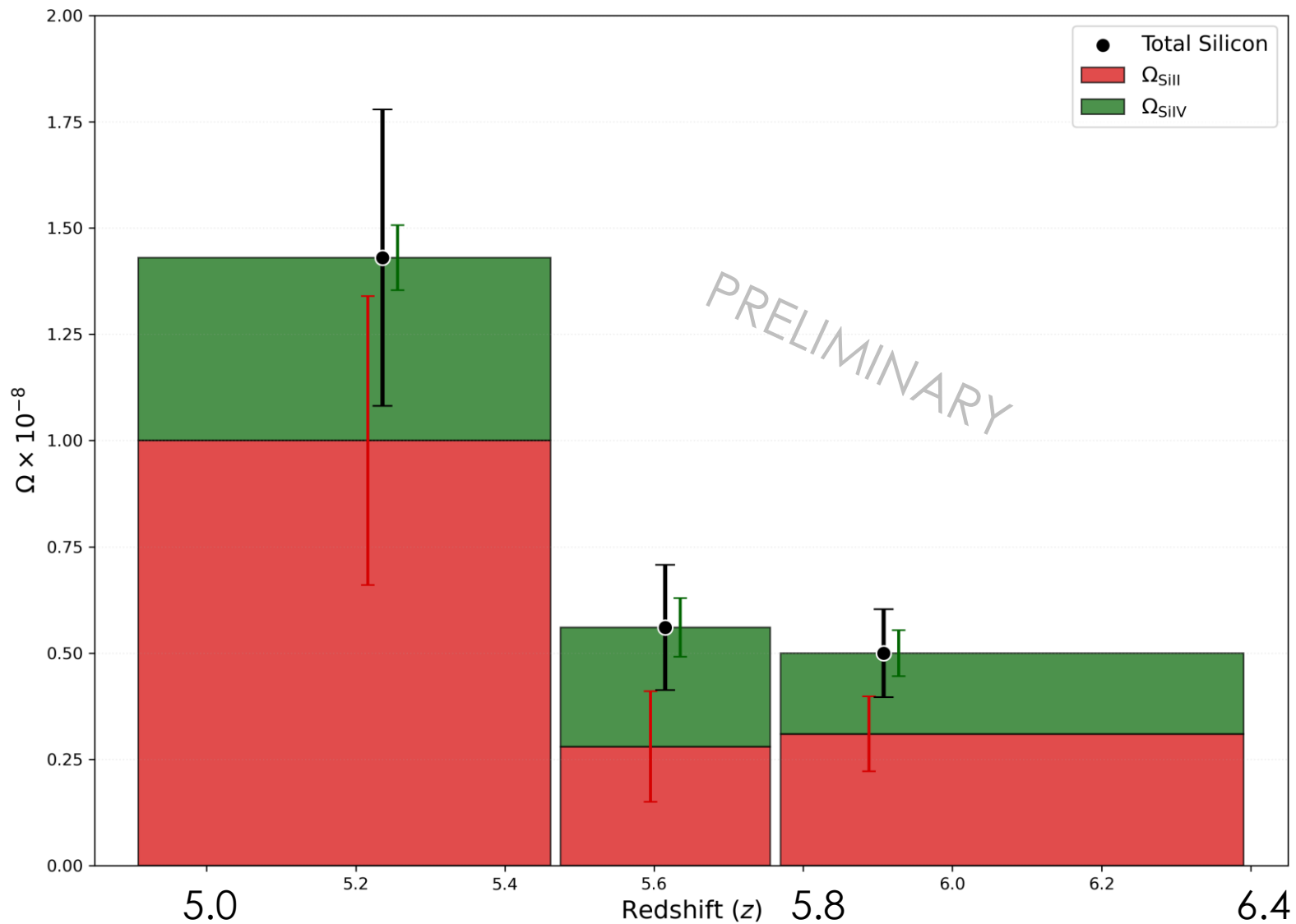
- Si IV E- XQR-30
- ◇ Si IV XQ-100
- ⬠ Si II E-XQR-30

Evolution of Si IV and Si II

Cosmic
Mass
Density

$3 < z < 6.5$

D'Odorico et al.
in prep.



WORK IN
PROGRESS

Si IV E- XQR-30

Si II E-XQR-30

Next steps

1. Revise the results from Sill, which behaves in a peculiar way;
2. Check the behaviour of Al II which covers a wide redshift range and has an ionization potential to go from Al II to Al III intermediate between CII and Sill

Si II \rightarrow Si III i.p. 16.34 eV
Al II \rightarrow Al III i.p. 18.16 eV
C II \rightarrow C III i.p. 24.38 eV