Insights into the Lyman continuum leakers

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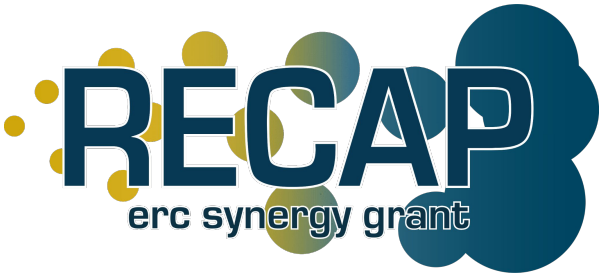
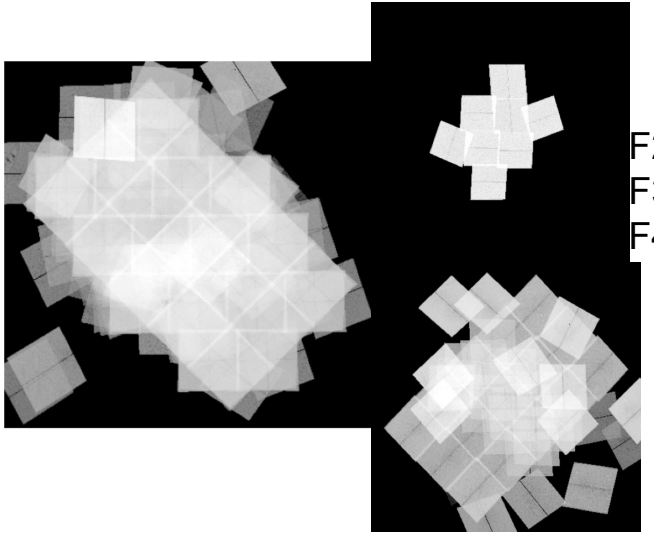


Searching for new LyC leakers

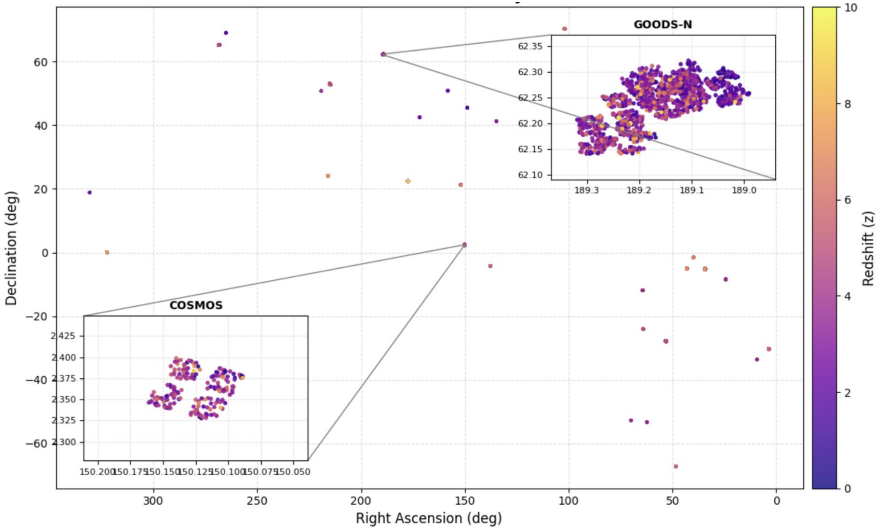
HST imaging + JWST spectroscopy

UV Candels +
GOODs N/S, COSMOS, EGS



LyC
F275W z > 2.23
F336W z > 2.96
F435W z > 4.28

DJA catalog: PRISM



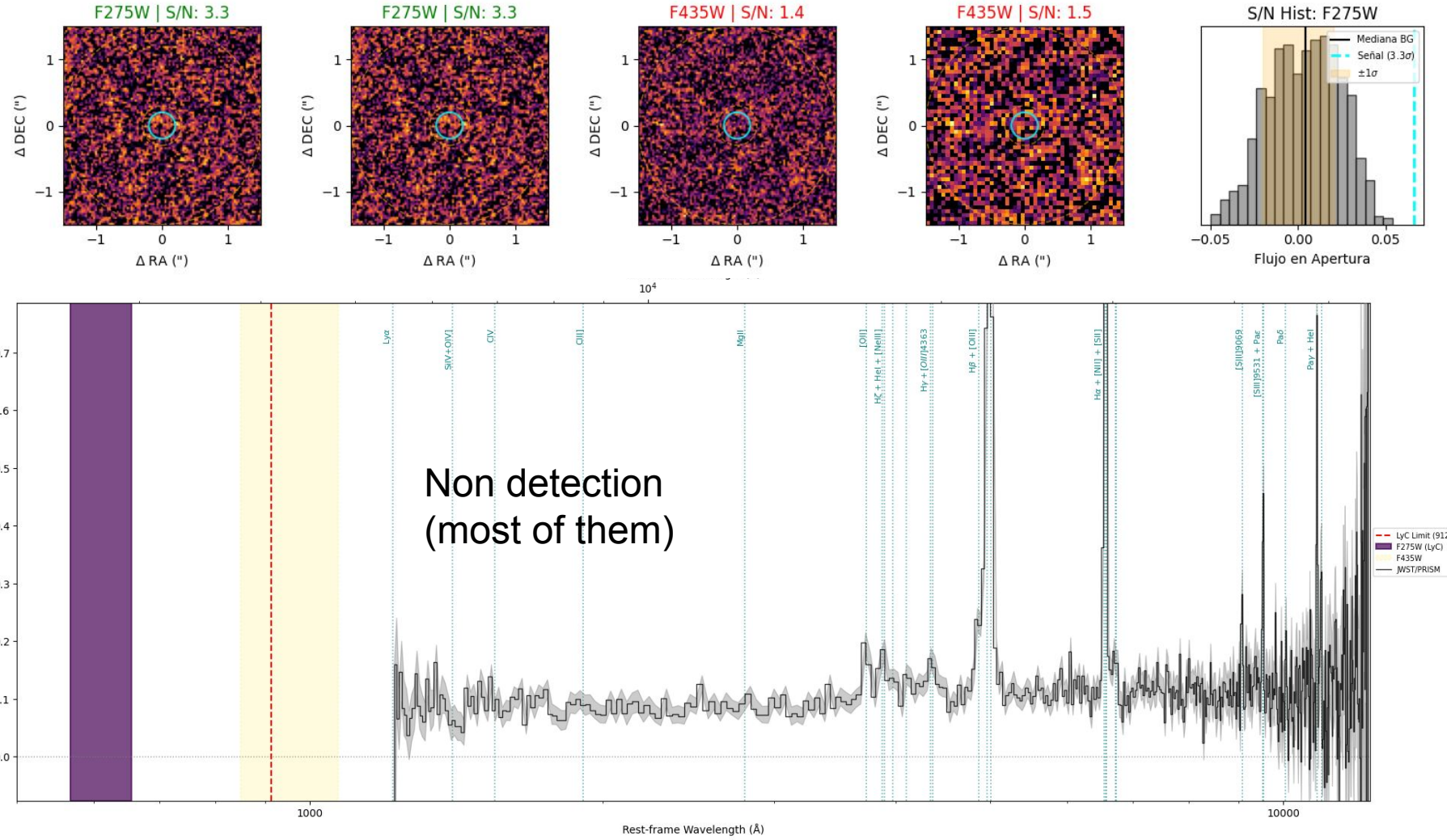
Searching methodology

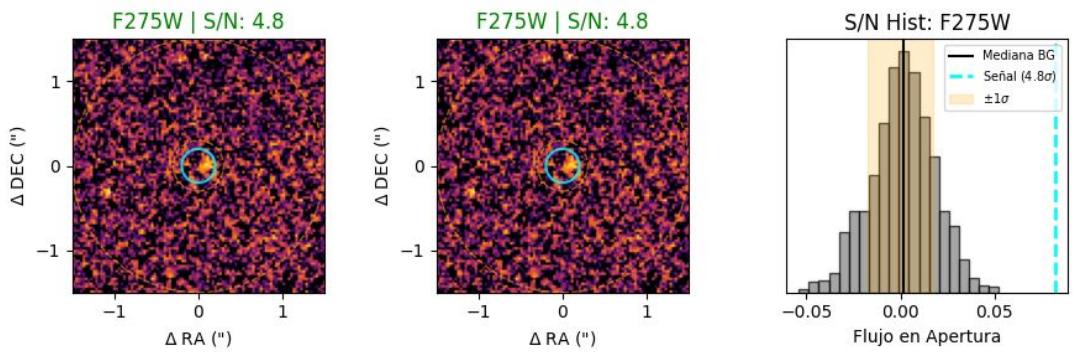
1 Retrieve all DJA spectra in HST fields

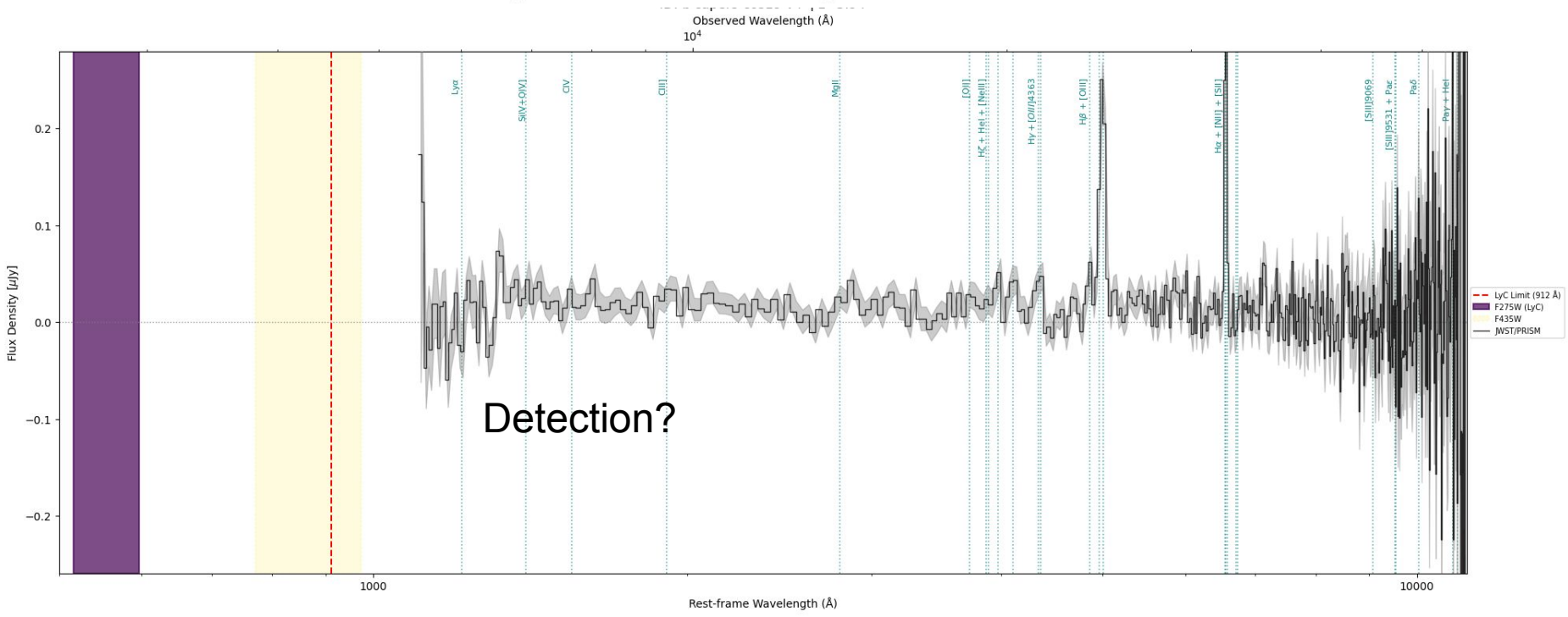
2 Cutout of all HST available images around each galaxy

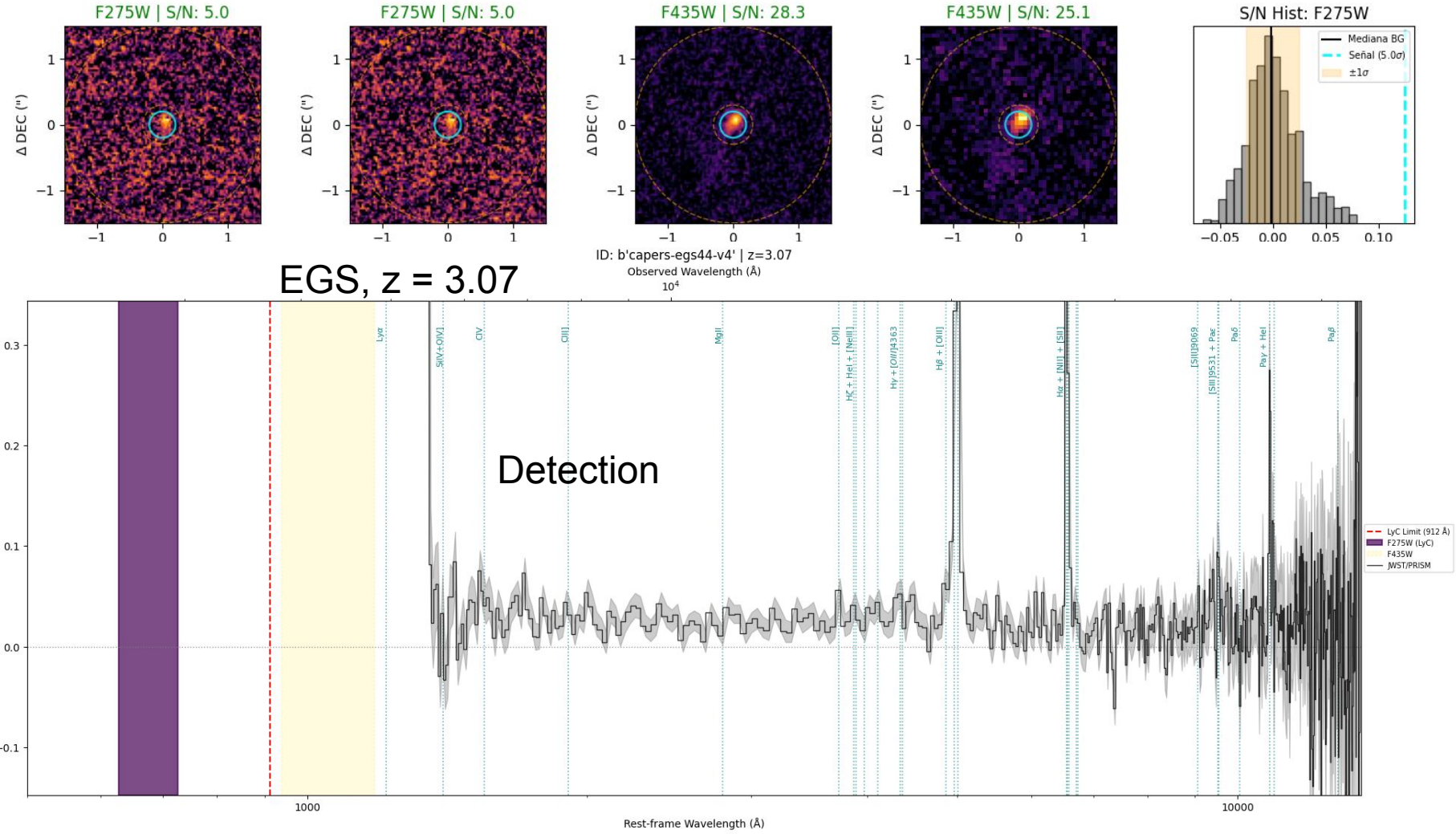
3 Find for S/N>X in at least one image where the filter is entirely in the LyC

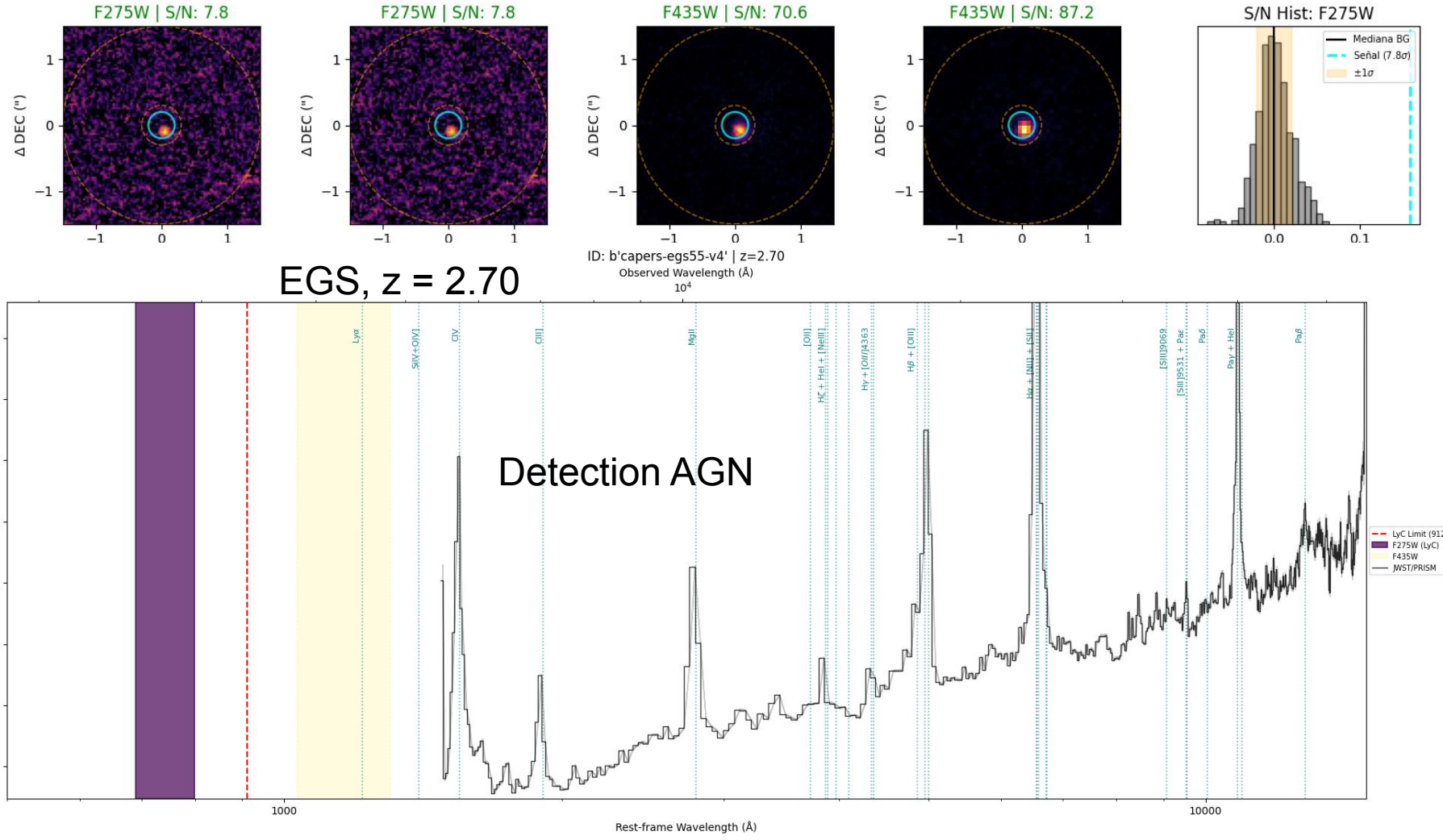
4 Visual inspection


F275W | S/N: 3.3
F275W | S/N: 3.3
F435W | S/N: 1.4
F435W | S/N: 1.5
S/N Hist: F275W
Mediana BG
Señal (3.3σ)
±1σ
Δ DEC (")
Δ RA (")
Flujo en Apertura
Non detection
(most of them)
Flux Density [μJy]
Rest-frame Wavelength (Å)
LyC Limit (912 Å)
F275W (LyC)
F435W
JWST/PRISM


F275W | S/N: 4.8
F275W | S/N: 4.8
S/N Hist: F275W
Δ DEC (")
Δ RA (")
Mediana BG
Señal (4.8σ)
±1σ
Flujo en Apertura

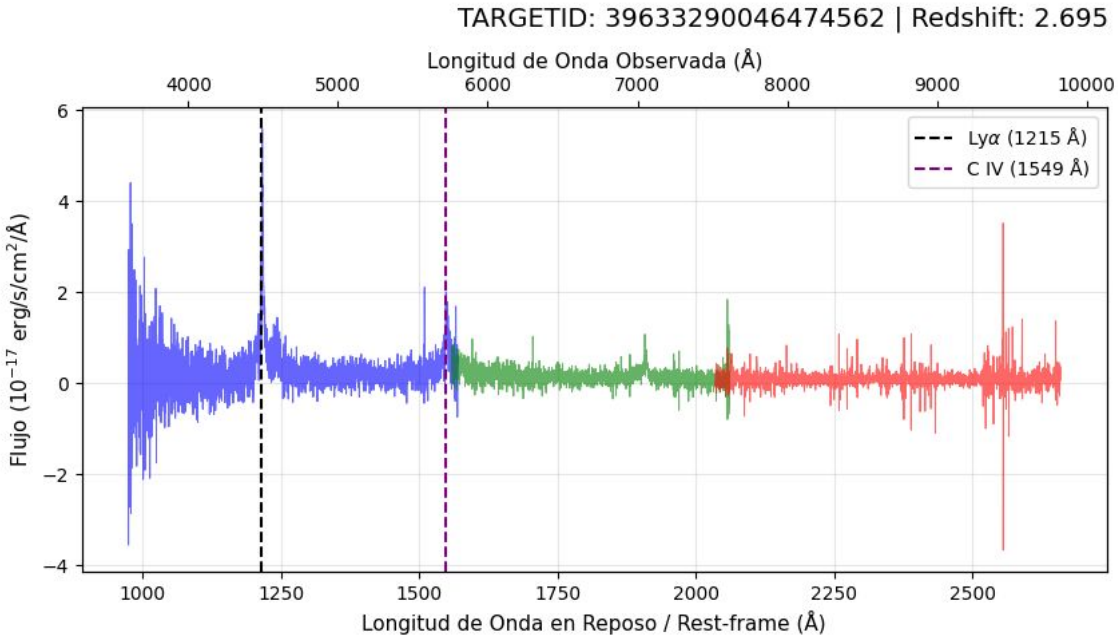

Observed Wavelength (Å)
Flux Density [μJy]
Rest-frame Wavelength (Å)
Lyα
SiIV+OIV]
CIV
CIII]
MgII
[OII]
Hδ + [OIII]
Hα + [NII] + [SII]
[SIII]9069
[SIII]9531 + Paε
Paδ
Pay + HeI
LyC Limit (912 Å)
F275W (LyC)
F435W
JWST/PRISM
Detection?

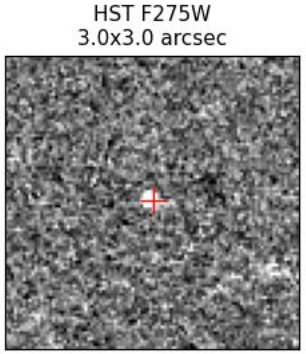

F275W | S/N: 5.0
F275W | S/N: 5.0
F435W | S/N: 28.3
F435W | S/N: 25.1
S/N Hist: F275W
Mediana BG
Señal (5.0σ)
±1σ
Δ DEC (")
ID: b'capers-egs44-v4' | z=3.07
Observed Wavelength (Å)
EGS, z = 3.07
Detection
Flux Density [μJy]
Rest-frame Wavelength (Å)
LyC Limit (912 Å)
F275W (LyC)
F435W
JWST/PRISM


F275W | S/N: 7.8
F275W | S/N: 7.8
F435W | S/N: 70.6
F435W | S/N: 87.2
S/N Hist: F275W
Mediana BG
Señal (7.8σ)
±1σ
Δ DEC (")
ID: b'capers-egs55-v4' | z=2.70
Observed Wavelength (Å)
EGS, z = 2.70
Detection AGN
Flux Density [μJy]
Rest-frame Wavelength (Å)
LyC Limit (912 Å)
F275W (LyC)
F435W
JWST/PRISM

HST imaging + DESI spectroscopy

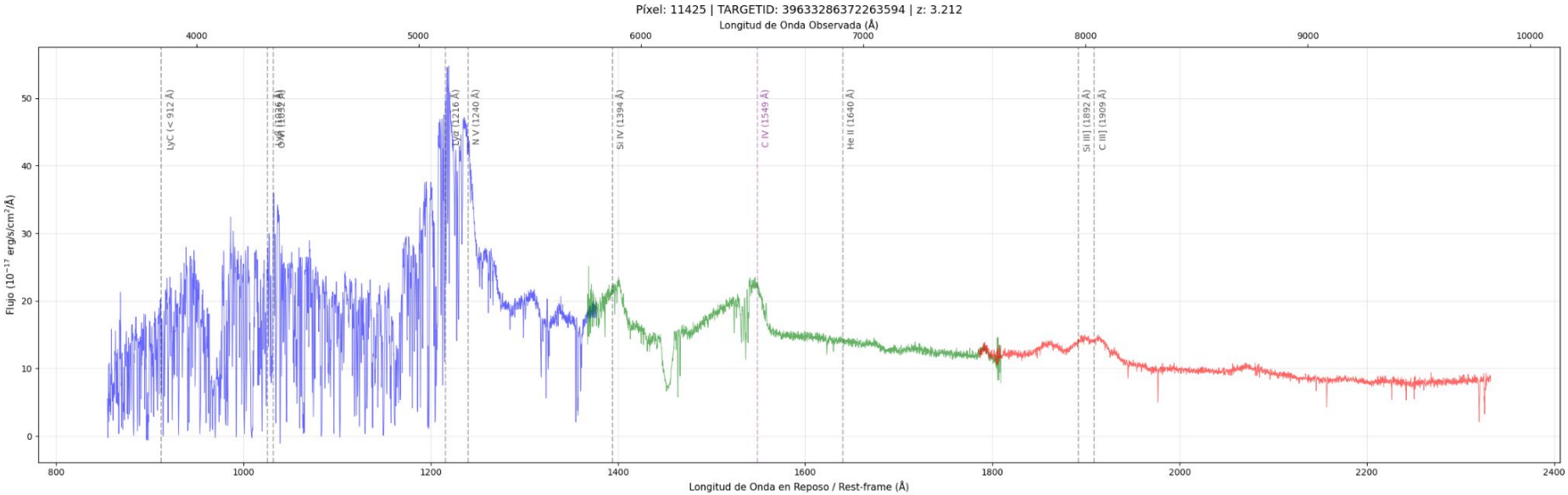
catalog with >10 million galaxy spectra
not deep as JWST and focus on low z



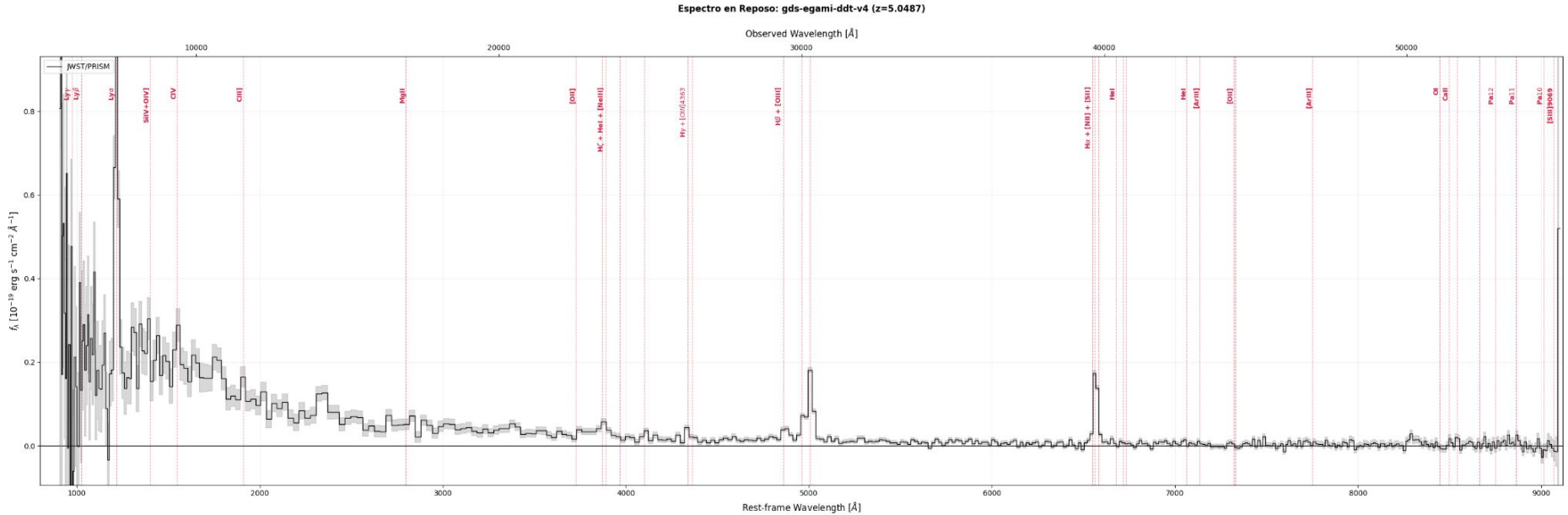


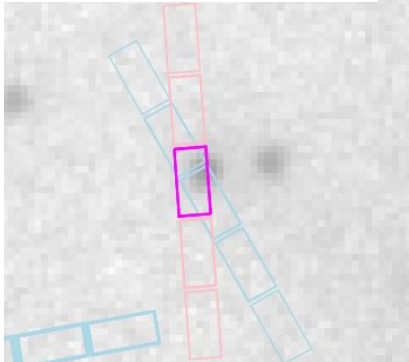
Check for all z>3 DESI spectra where LyC is in the range

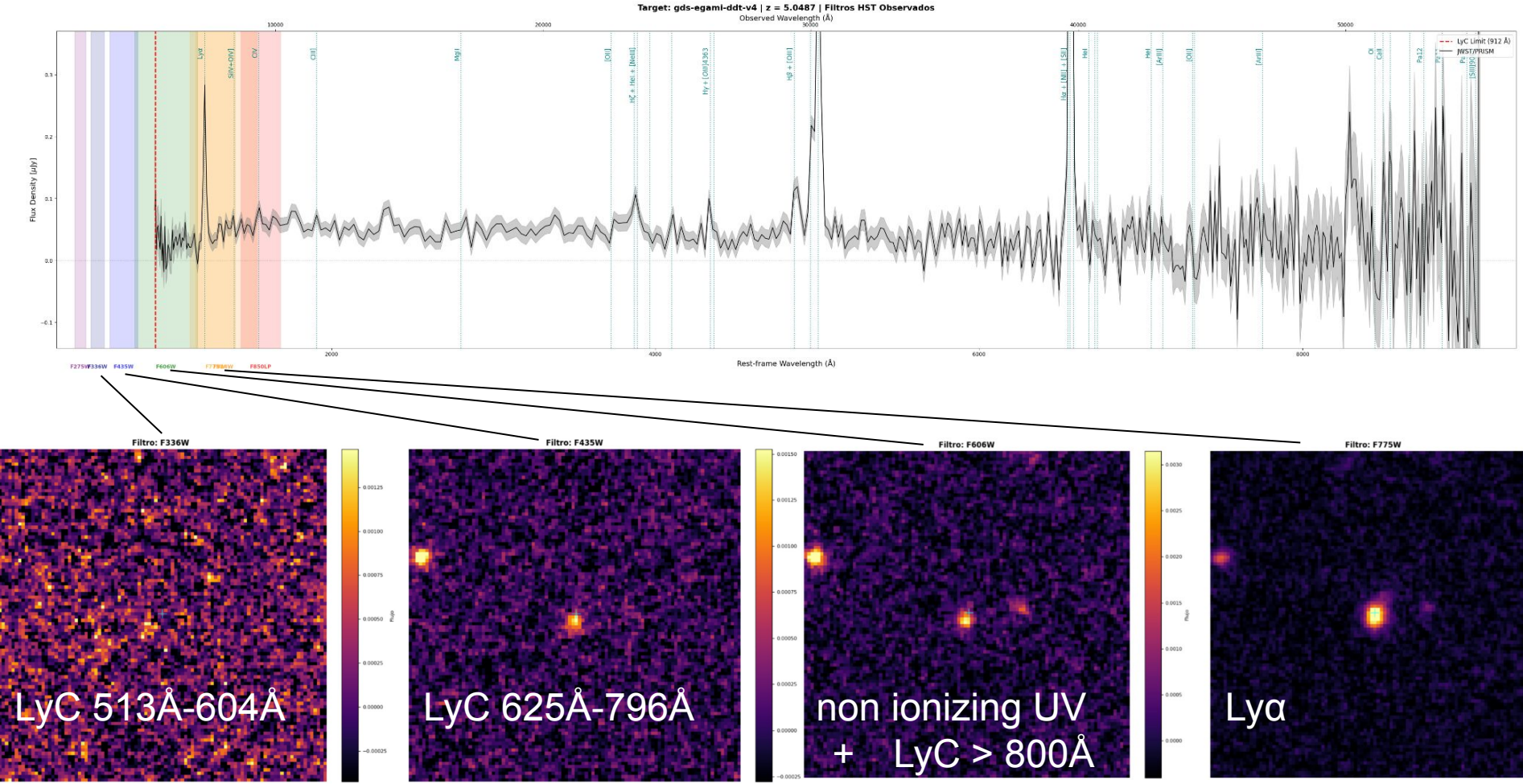
We found some AGN leakers



An intriguing possible LyC leaker candidate at z>5

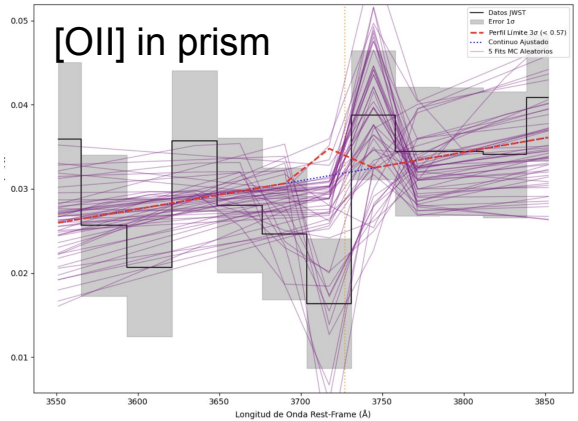





Target: gds-egami-ddt-v4 | z = 5.0487 | Filtros HST Observados
Observed Wavelength (Å)
Rest-frame Wavelength (Å)
Flux Density (μJy)
LyC Limit (912 Å)
JWST/PRISM
Lyα
SiIV+OIV]
CIV
CIII]
MgII
[OII]
Hγ + [OIII]4363
Hβ + [OIII]
[Ne III] + [SII]
HeII
[ArIII]
CaII
F275W
F336W
F435W
F606W
F775W
F850LP
Filtro: F336W
Filtro: F435W
Filtro: F606W
Filtro: F775W
LyC 513Å-604Å
LyC 625Å-796Å
non ionizing UV
+ LyC > 800Å
Lyα

Indirect LyC escape tracers

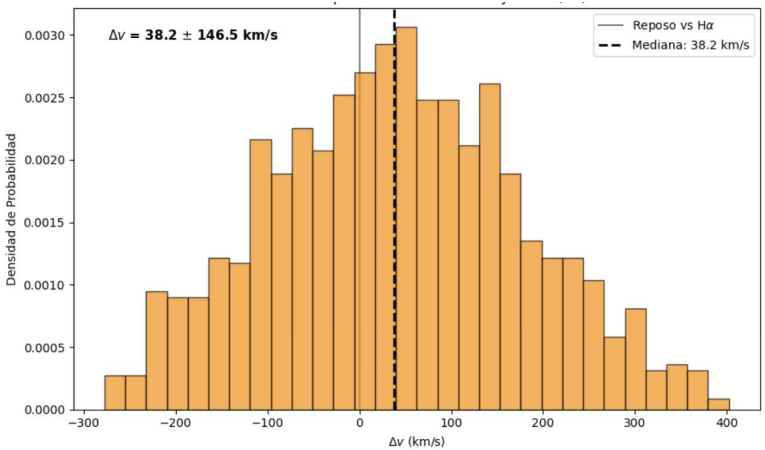
High O32 ratio >10



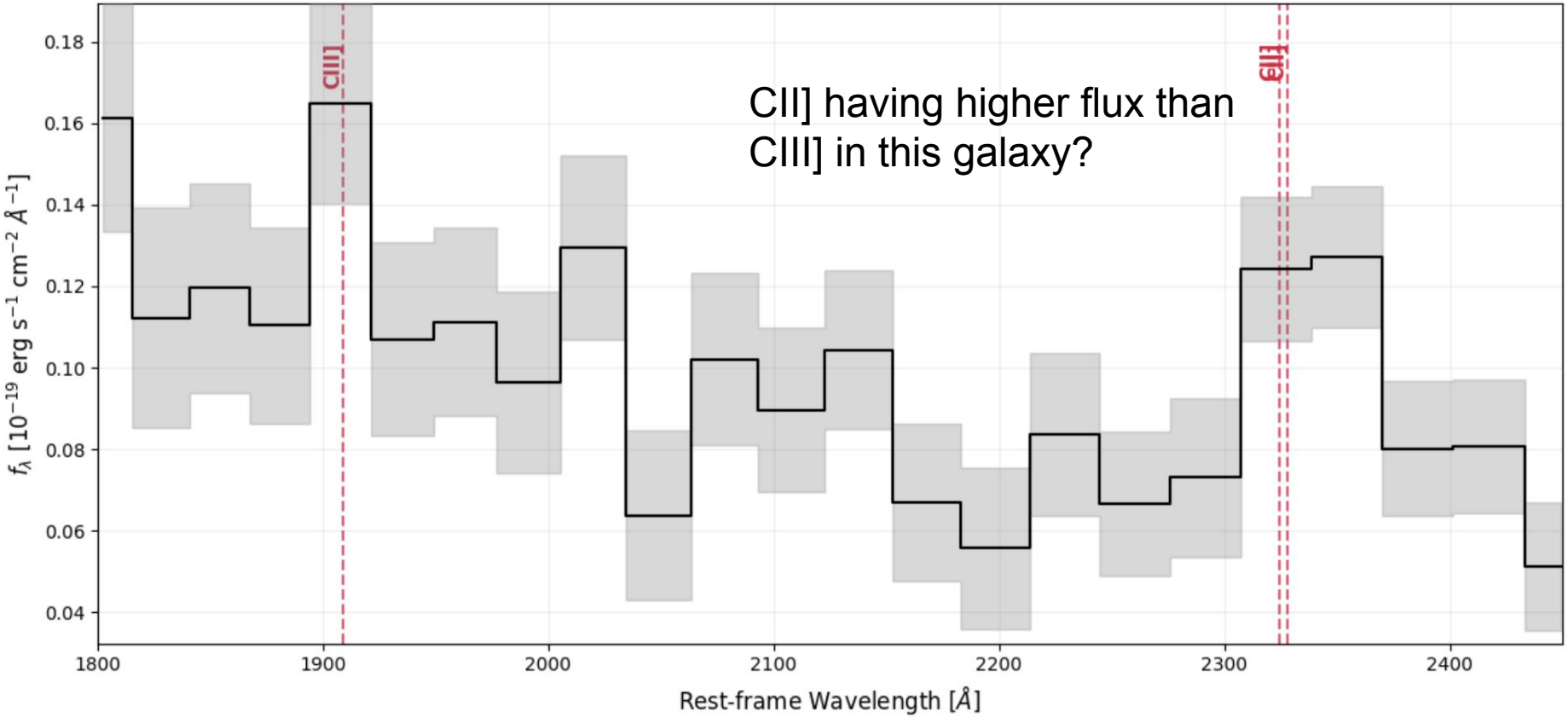
EW0 Lyα = 122±10 Å
EW0 Hα = 1050 ± 260 Å

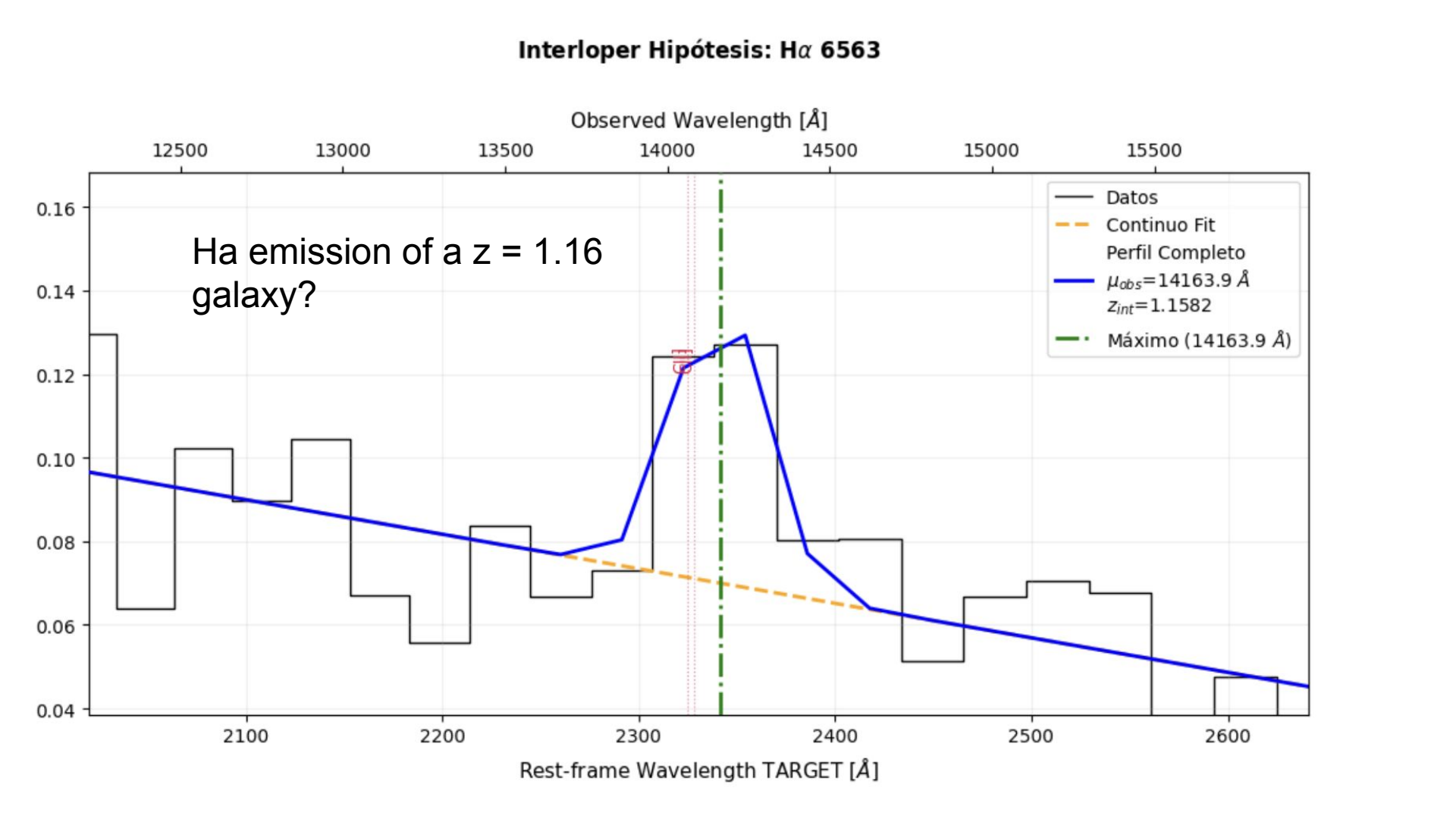
βUV = -2.21±0.16

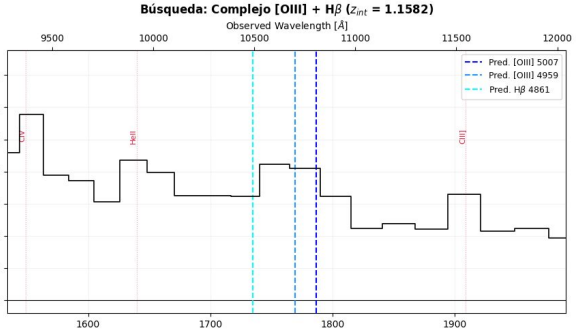
Lyα velocity close to the Hα one, still with big uncertainties due to PRISM resolution

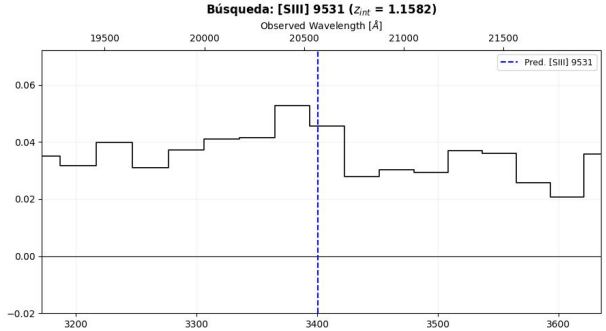


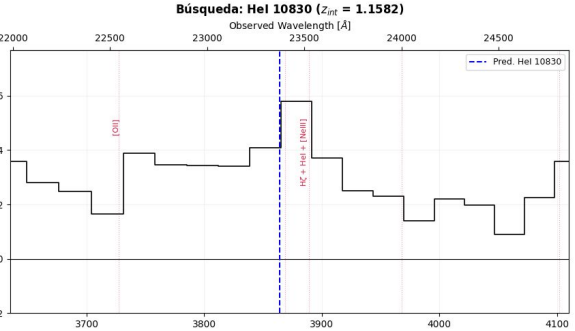
Interloper?

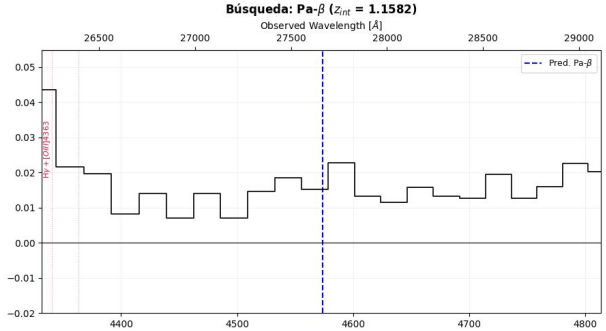

CII] having higher flux than CIII] in this galaxy?
CIII]
CII]
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
f_λ [10^{-19} erg s^{-1} cm^{-2} Å^{-1}]
1800
1900
2000
2100
2200
2300
2400
Rest-frame Wavelength [Å]

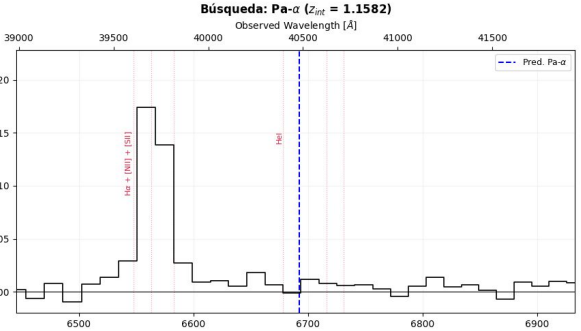

Interloper Hipótesis: Hα 6563
Observed Wavelength [Å]
12500
13000
13500
14000
14500
15000
15500
Ha emission of a z = 1.16 galaxy?
Datos
Continuo Fit
Perfil Completo
μ_{obs}=14163.9 Å
z_{int}=1.1582
Máximo (14163.9 Å)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
2100
2200
2300
2400
2500
2600
Rest-frame Wavelength TARGET [Å]





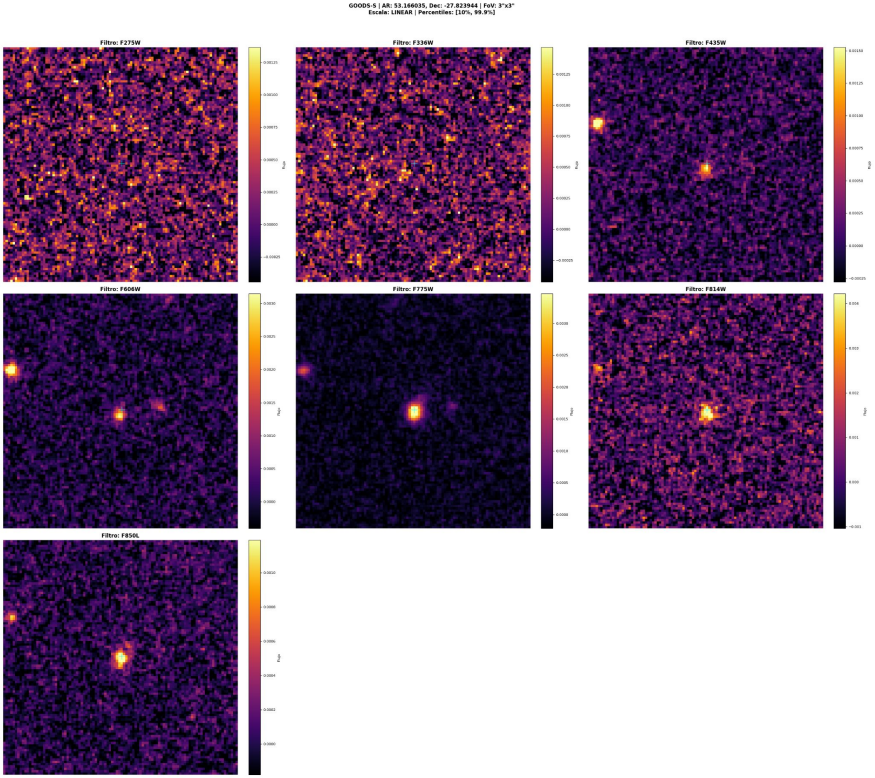




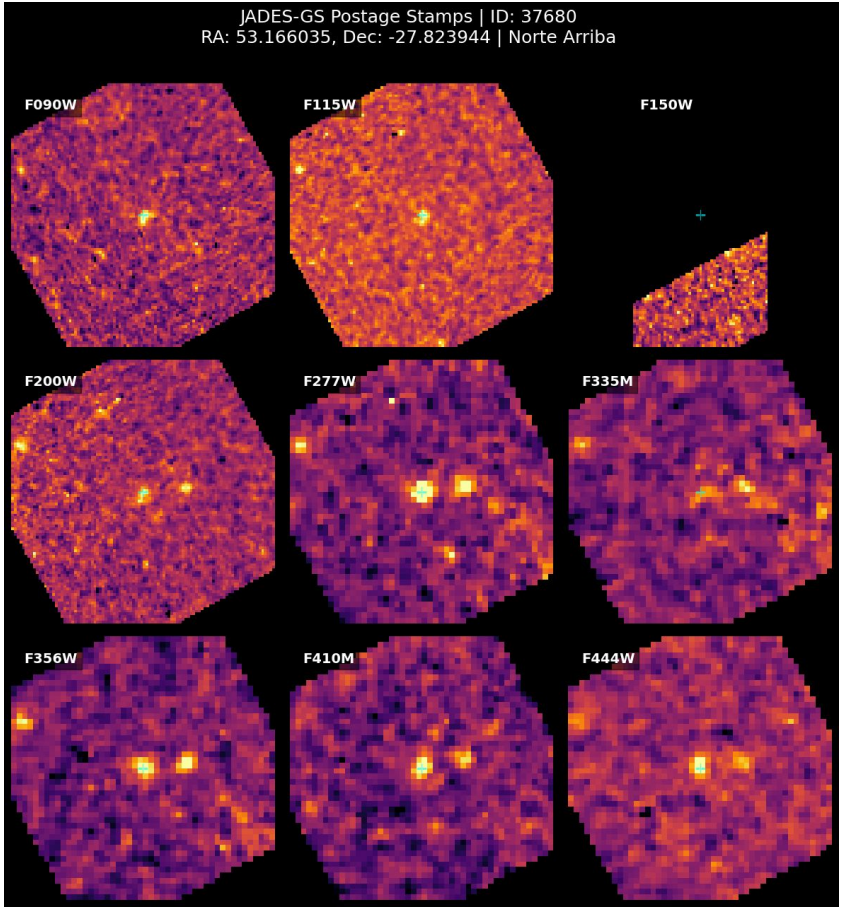


Not clear correspondence with other expected lines

HST photometry



JWST photometry



HST + JWST photometry