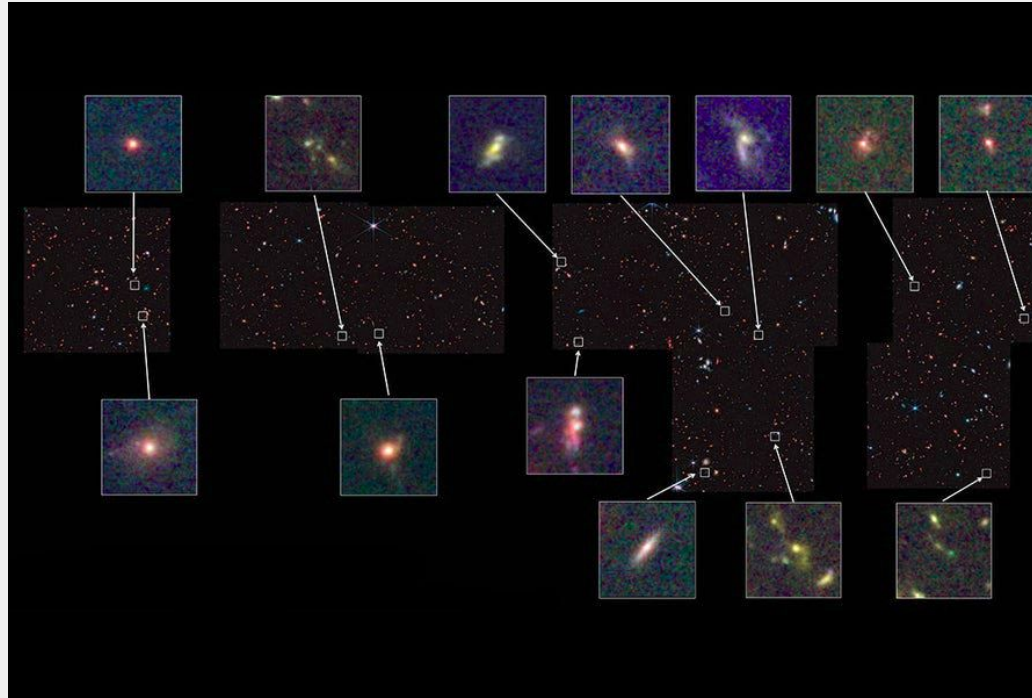


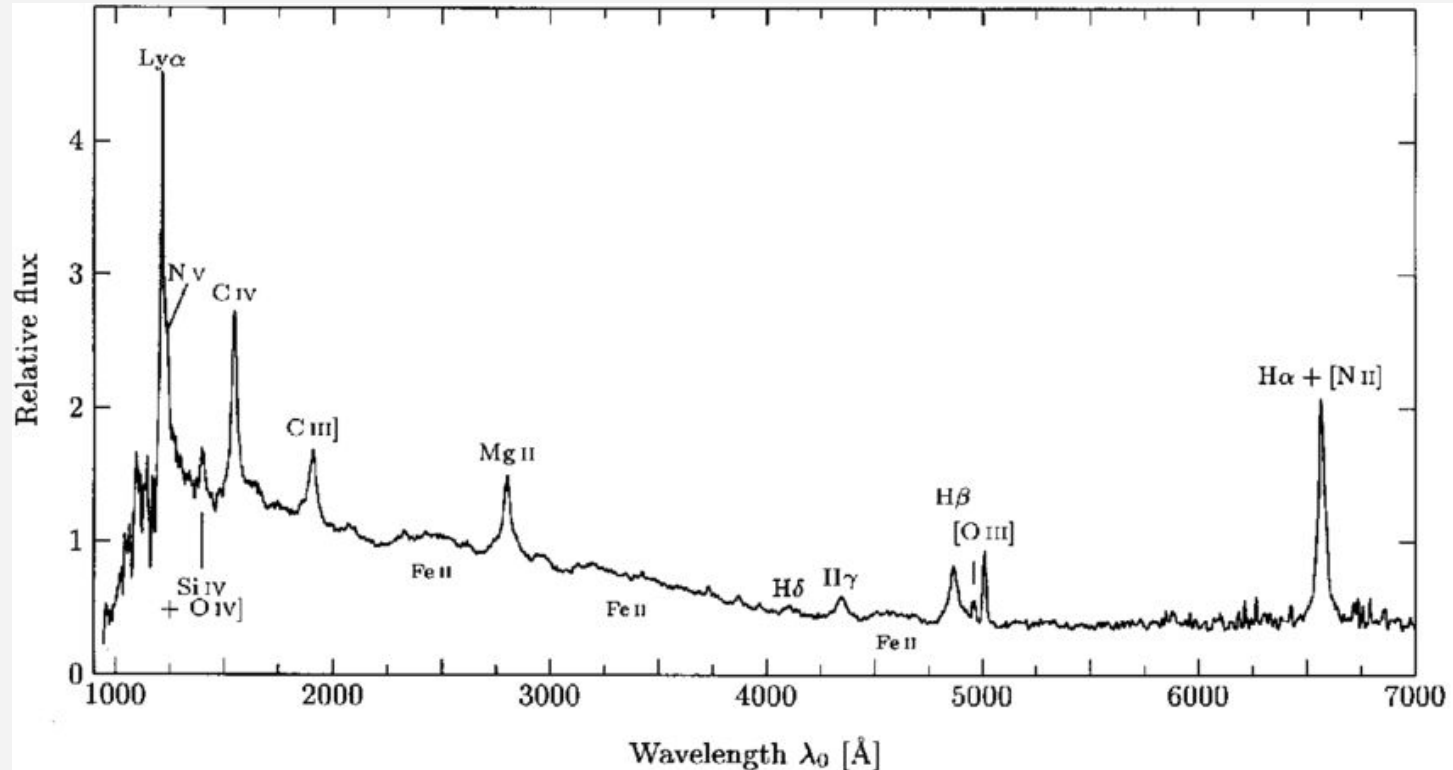
# High Redshift Galaxies

- **Clumpy**
- **Compact**
- **Bluer**
- **Dominated by young stellar population**
- **Prominent Emission lines in Spectra**



(Curtis-Lake et. al. 2023)

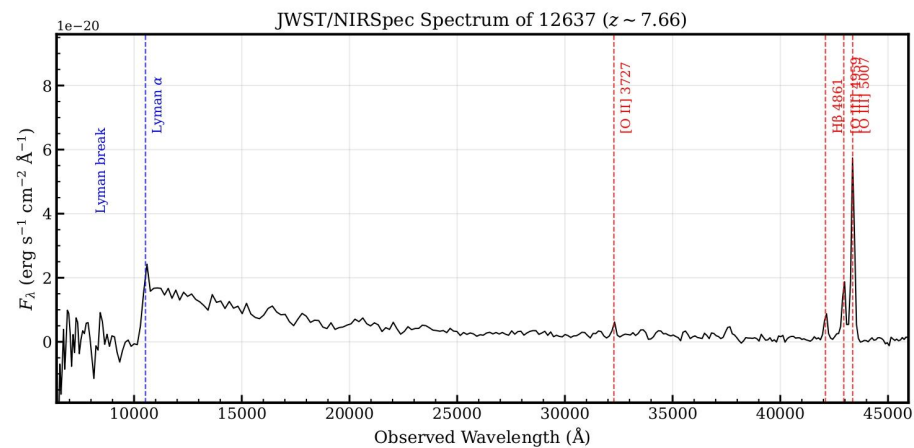
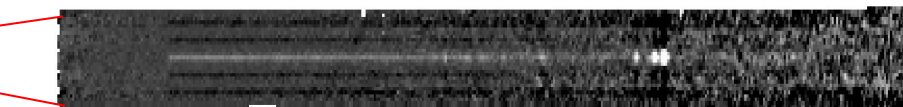
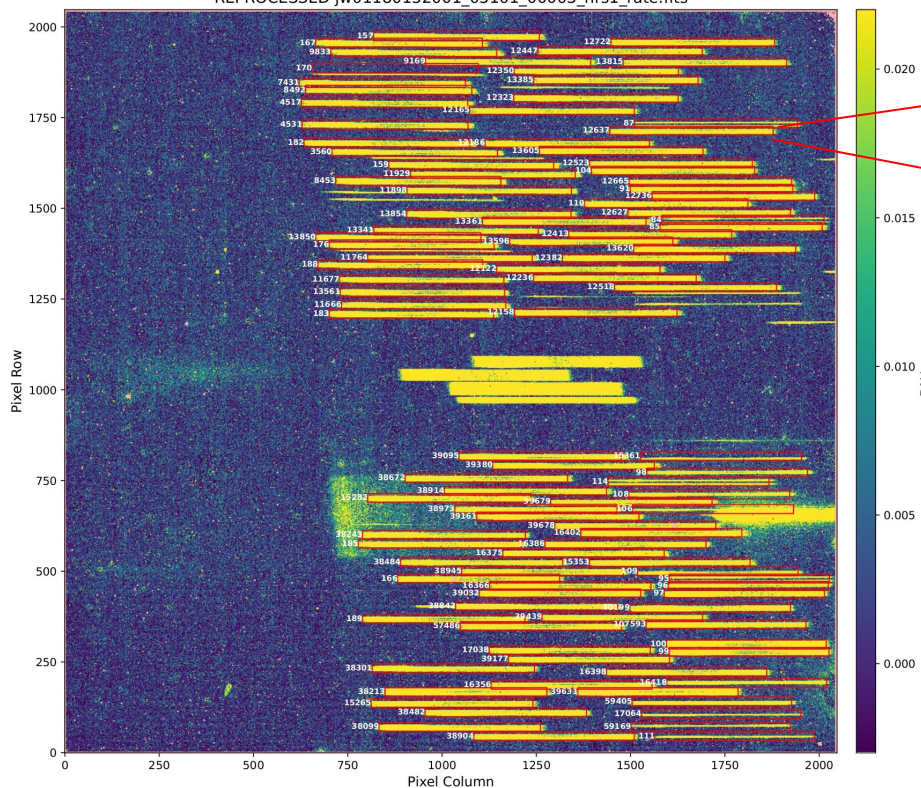
# Spectra of emission line galaxy



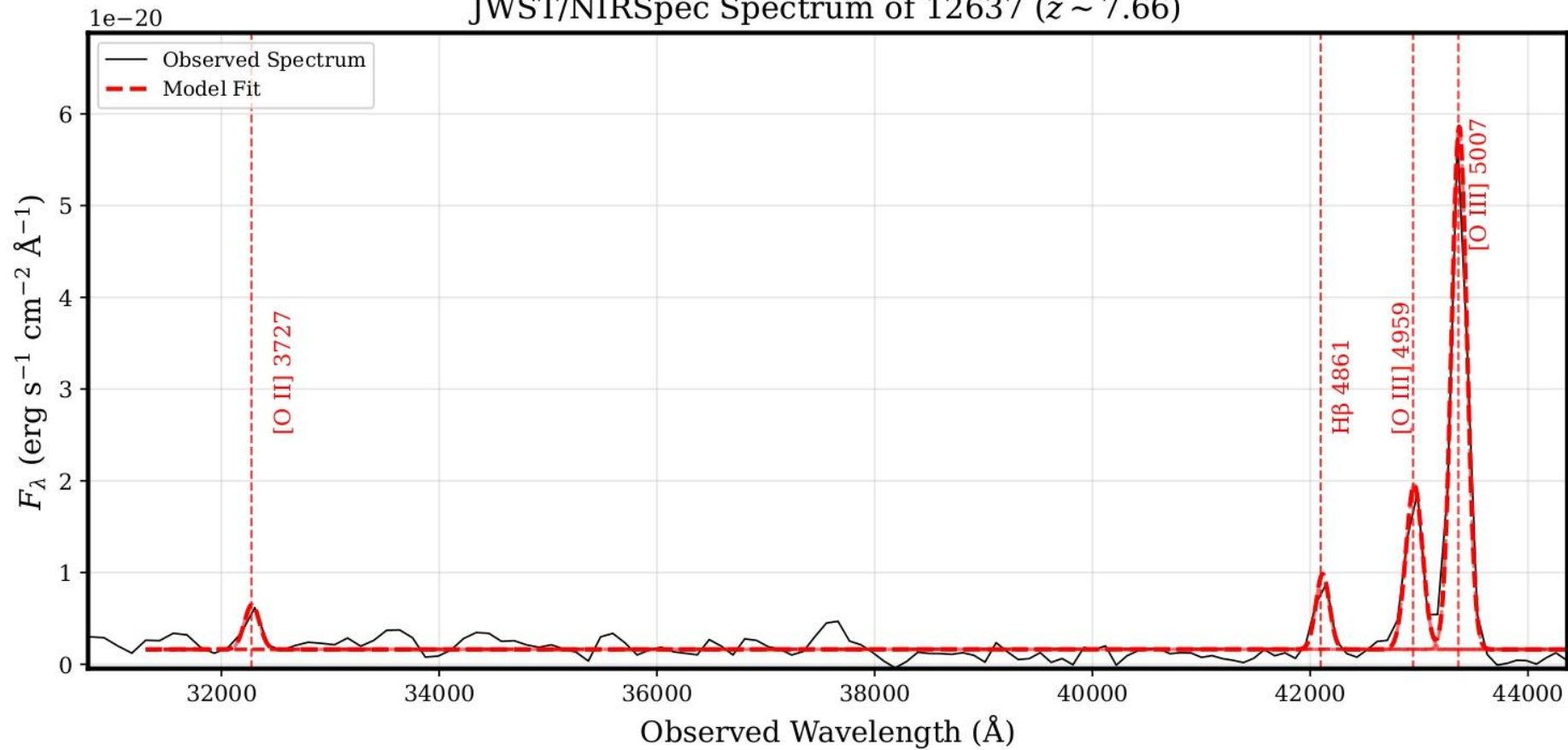
(Meusinger 2002)

**Table 1.** Observed LAE properties.

ID	JADES source name	$z_{\text{spec}}$	$M_{\text{UV}}$ (mag)	$\beta_{\text{UV}}$	$\text{EW}_{\text{Ly}\alpha}$ (Å)	$\Delta v_{\text{Ly}\alpha}$ (km s <sup>-1</sup> )	$f_{\text{esc,Ly}\alpha}$
10056849	JADES-GS+53.11351-27.77284	5.814	$-18.14 \pm 0.04$	$-2.49 \pm 0.04$	$97 \pm 15$	215	$0.29 \pm 0.04$
19606	JADES-GS+53.17655-27.77111 (*)	5.889	$-18.61 \pm 0.03$	$-2.70 \pm 0.06$	$89 \pm 11$	53 (**)	$0.36 \pm 0.03$
9365	JADES-GS+53.16280-27.76084 (*)	5.917	$-19.37 \pm 0.01$	$-2.52 \pm 0.09$	$118 \pm 28$	180	$0.28 \pm 0.04$
9422	JADES-GS+53.12175-27.79763	5.937	$-19.80 \pm 0.01$	$-2.33 \pm 0.04$	$124 \pm 15$	175	$0.26 \pm 0.01$
6002	JADES-GS+53.11041-27.80892	5.937	$-18.72 \pm 0.04$	$-2.59 \pm 0.01$	$50.5 \pm 5.8$	170	$0.35 \pm 0.04$
19342	JADES-GS+53.16062-27.77161 (*)	5.974	$-18.55 \pm 0.05$	$-2.75 \pm 0.04$	$49.9 \pm 9.6$	279	$0.24 \pm 0.04$
17138	JADES-GS+53.08604-27.74760	6.204	$-19.34 \pm 0.04$	$-2.26 \pm 0.54$	$94 \pm 41$	0	$0.40 \pm 0.10$
58850	JADES-GS+53.09517-27.76061	6.263	$-19.82 \pm 0.03$	$-1.93 \pm 0.06$	$16.3 \pm 3.9$	230	$0.07 \pm 0.02$
14123	JADES-GS+53.17836-27.80098 (*)	6.327	$-19.20 \pm 0.03$	$-2.26 \pm 0.21$	$150 \pm 100$	106	$0.35 \pm 0.07$
18846	JADES-GS+53.13492-27.77271	6.336	$-19.90 \pm 0.01$	$-2.43 \pm 0.01$	$44.2 \pm 1.7$	114	$0.26 \pm 0.01$
13607	JADES-GS+53.13743-27.76519	6.622	$-19.37 \pm 0.02$	$-1.79 \pm 0.29$	$33 \pm 11$	128	$0.26 \pm 0.08$
16625	JADES-GS+53.16904-27.77884 (*)	6.631	$-18.60 \pm 0.04$	$-2.59 \pm 0.02$	$51.0 \pm 7.4$	242	$0.14 \pm 0.02$
4297	JADES-GS+53.15579-27.81520	6.712	$-18.48 \pm 0.04$	$-2.39 \pm 0.09$	$106 \pm 23$	153	$0.55 \pm 0.04$
15362	JADES-GS+53.11634-27.76194	6.794	$-18.86 \pm 0.26$	$-2.14 \pm 0.15$	$50 \pm 28$	27	$0.20 \pm 0.07$
10013682	JADES-GS+53.16746-27.77201 (†)	7.276	$-16.86 \pm 0.28$	$-2.17 \pm 0.60$	$337 \pm 175$	178	$0.67 \pm 0.18$
12637	JADES-GS+53.13347-27.76037 (‡)	7.66	$-20.59 \pm 0.07$	$-2.20 \pm 0.02$	$24.0 \pm 1.9$	131	$0.15 \pm 0.01$
21842	JADES-GS+53.15682-27.76716	7.98	$-18.80 \pm 0.06$	$-2.52 \pm 0.03$	$29.2 \pm 3.3$	84	$0.09 \pm 0.01$



# JWST/NIRSpec Spectrum of 12637 ( $z \sim 7.66$ )



# Properties derived from the spectral fitting

[O II] 3727 Flux =  $8.4\text{e-}19$  erg/s/cm<sup>2</sup>

H $\beta$  Flux =  $1.2\text{e-}18$  erg/s/cm<sup>2</sup>

[O III] 4959 Flux =  $3.3\text{e-}18$  erg/s/cm<sup>2</sup>

[O III] 5007 Flux =  $1.0\text{e-}17$  erg/s/cm<sup>2</sup>

[O III]/[O II] (O32) = 15.86

[O III]5007 / H $\beta$  = 7.8

Metallicity:  $12 + \log(\text{O}/\text{H}) \approx 8.19$

[O III]5007 EW\_rest  $\approx 716.5$  Å

Ionizing Photon Production Efficiency ( $\xi_{\text{ion}}$ )

$\log \xi_{\text{ion}}$  (from OIII EW)  $\approx 25.14$