ULTRAVIOLET ASTRONOMY IN THE XXI CENTURY

e-Workshop 2020 – October 27-29

JcUVa

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Clues on the afterlife galaxies from SDSS spectra and GALEX photometry

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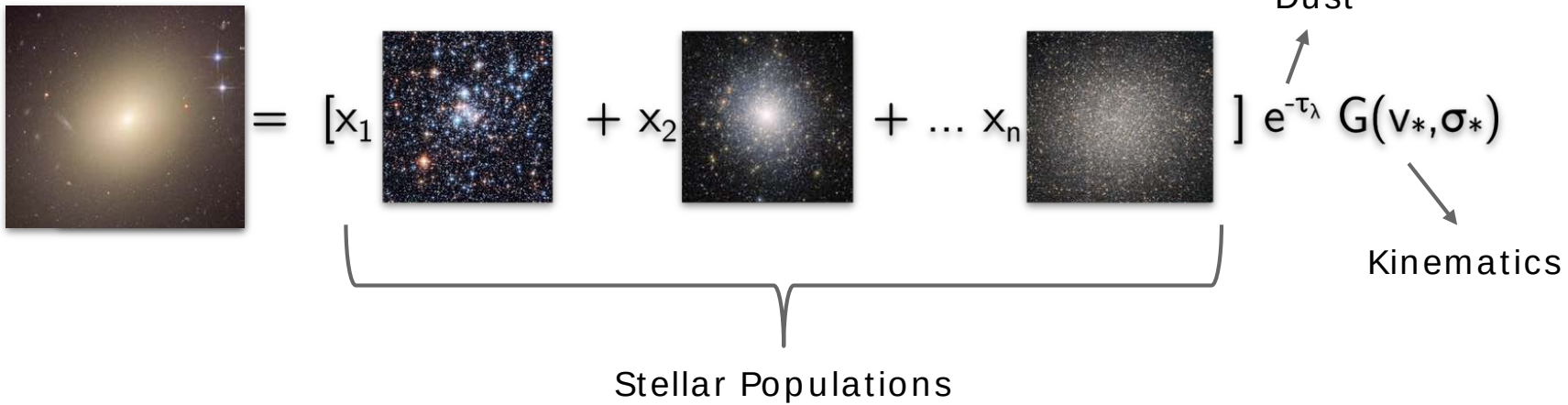
Spectral synthesis:
STARLIGHT

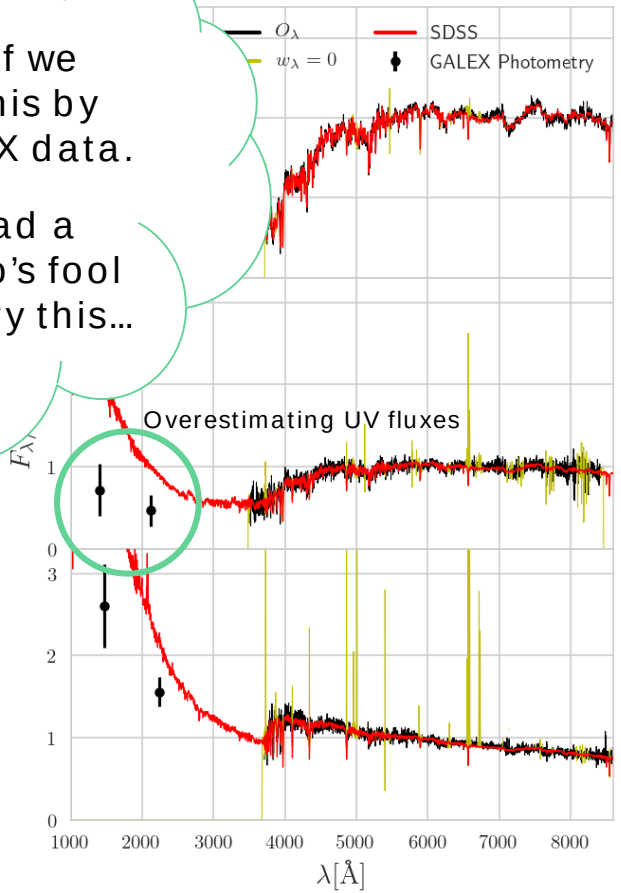
Spectral synthesis



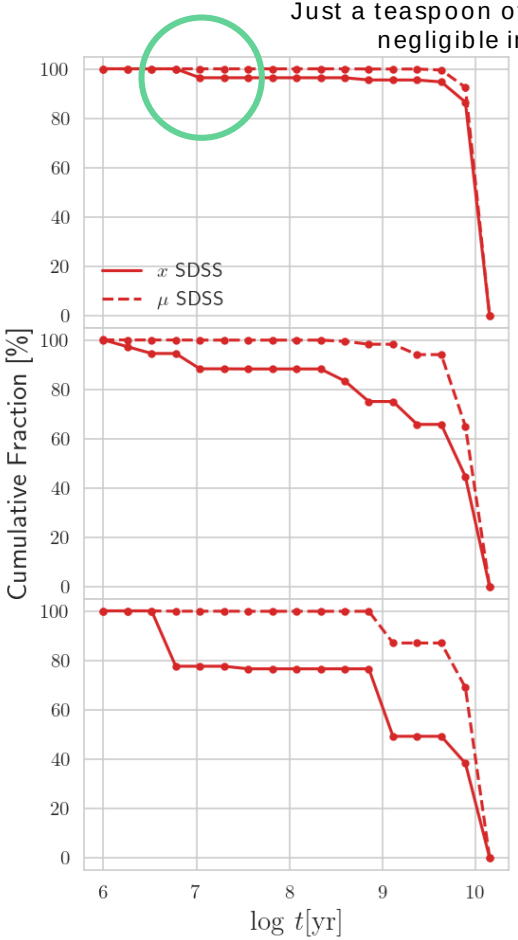
An old known issue

I wonder if we could fix this by fitting GALEX data.

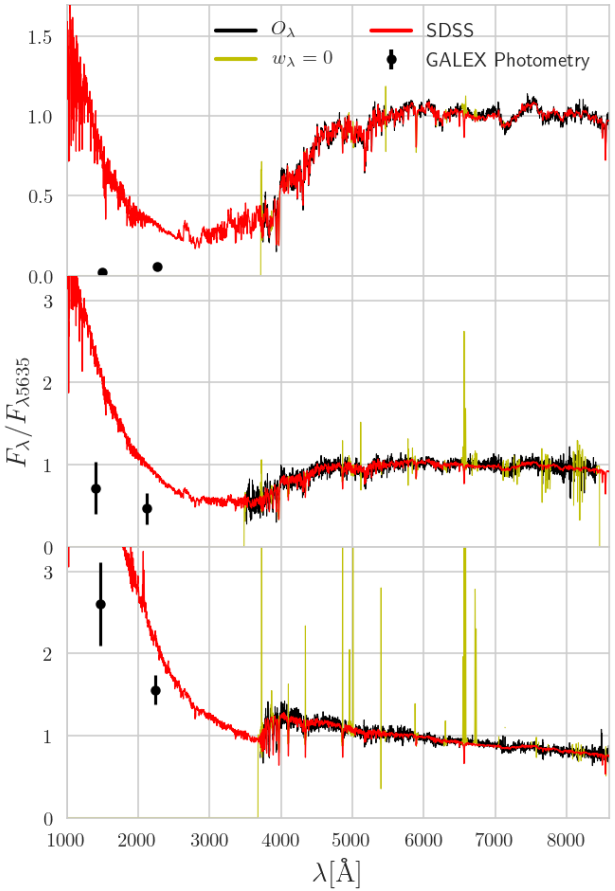
If only I had a student who's fool enough to try this…

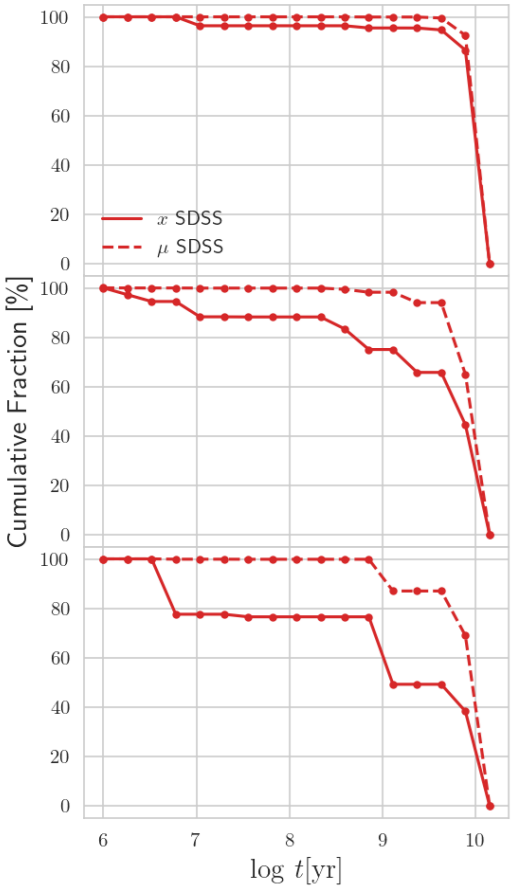


Just a teaspoon of optical light, negligible in mass



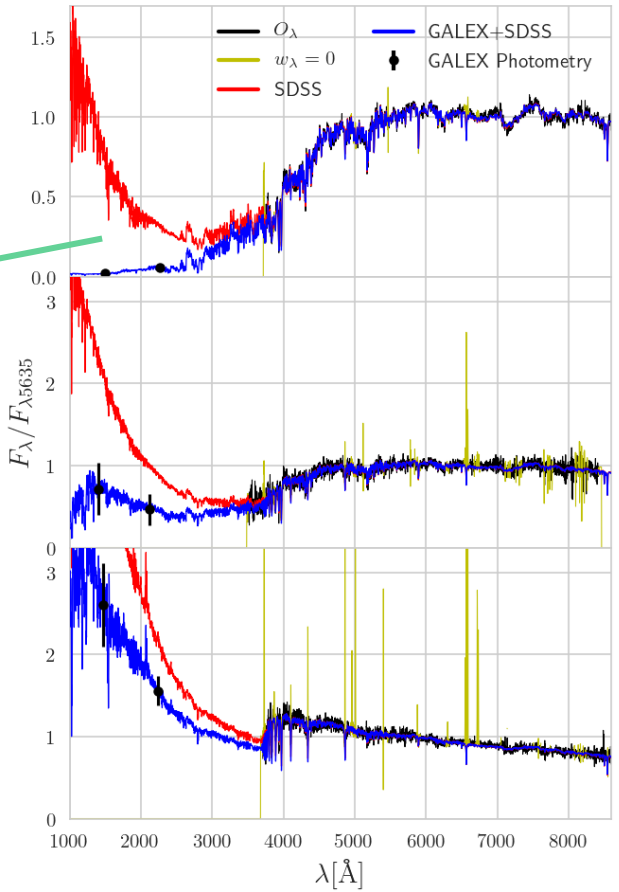
GALEX+SDSS synthesis



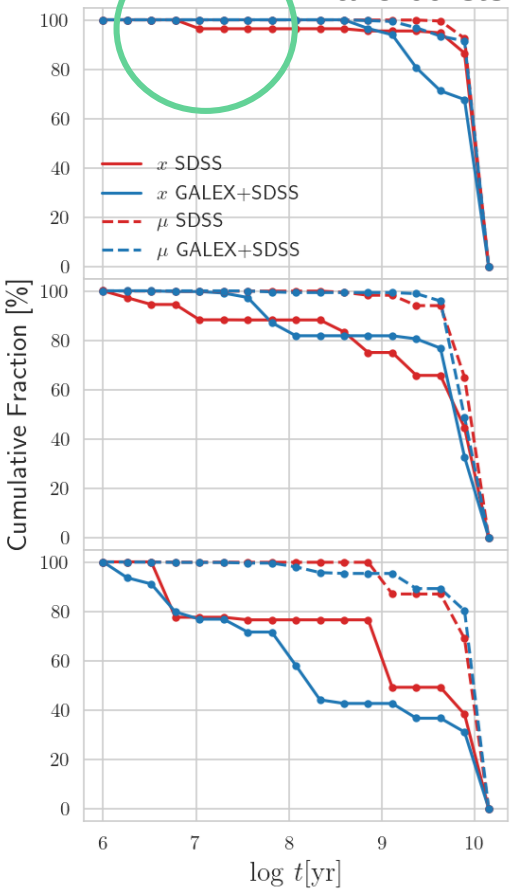


GALEX+SDSS synthesis

GALEX data prevents the overshooting of UV fluxes!

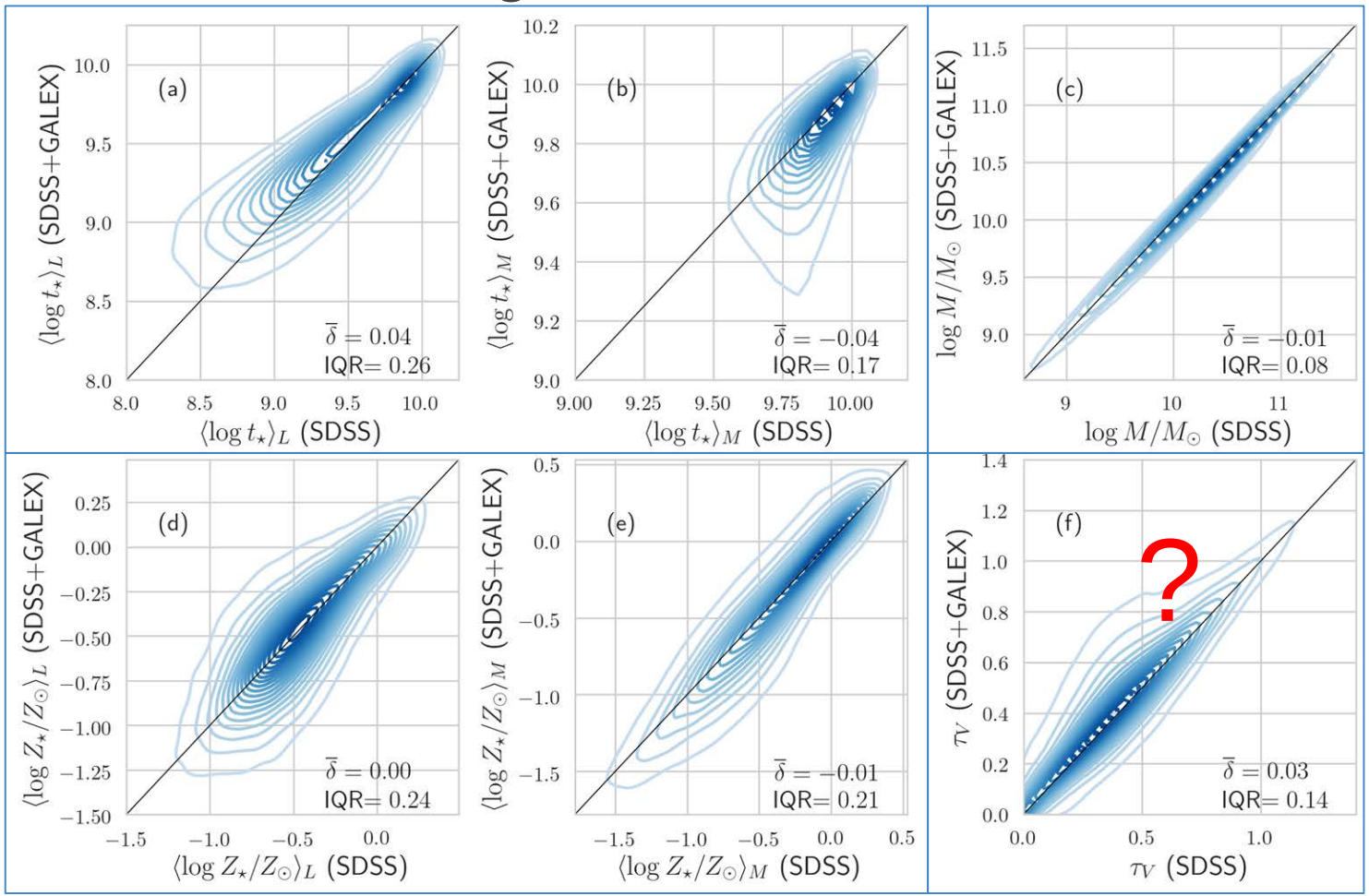


Fake bursts are gone!



What changes
with UV data?

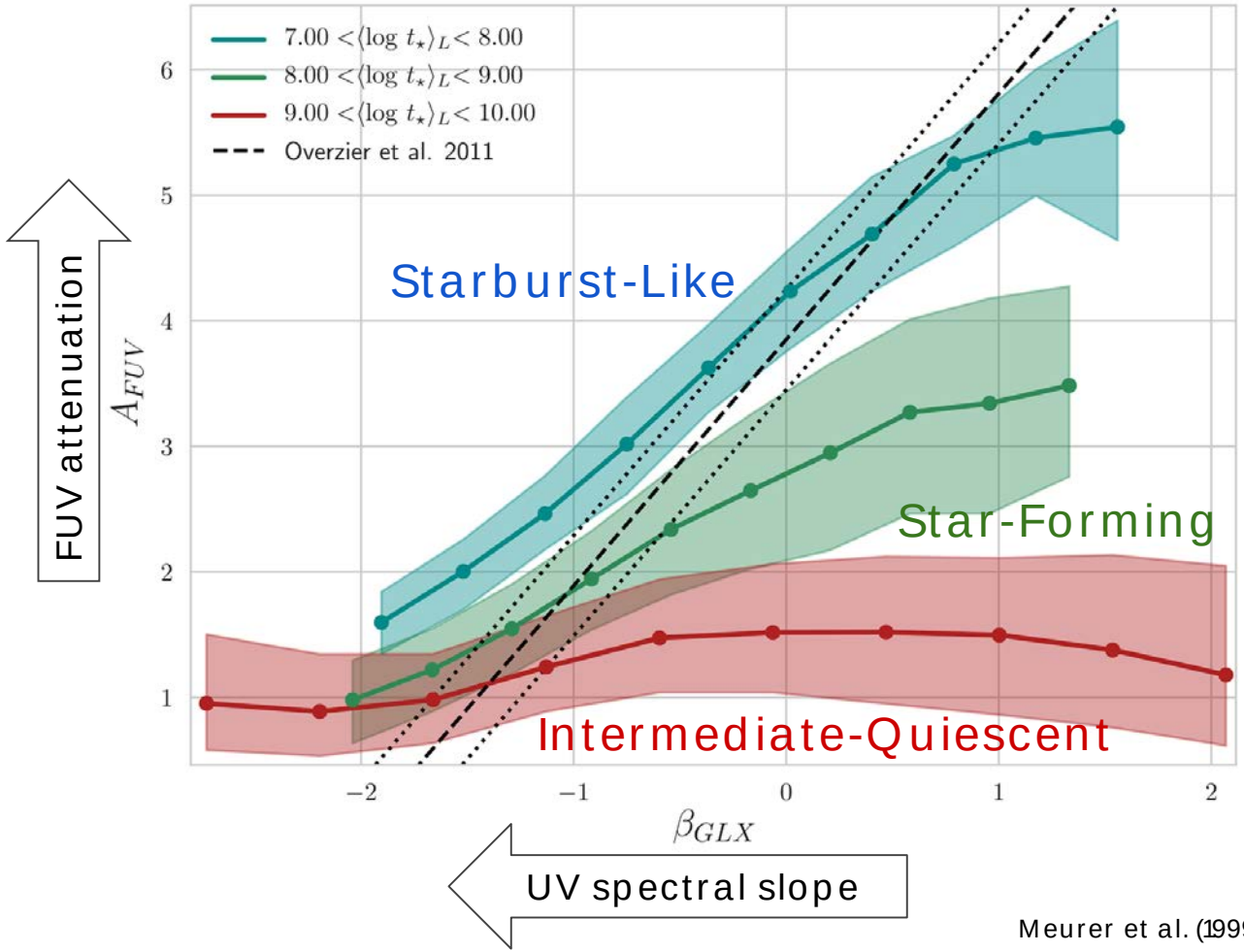
What changes with GALEX data?



β - A_{FUV} relation

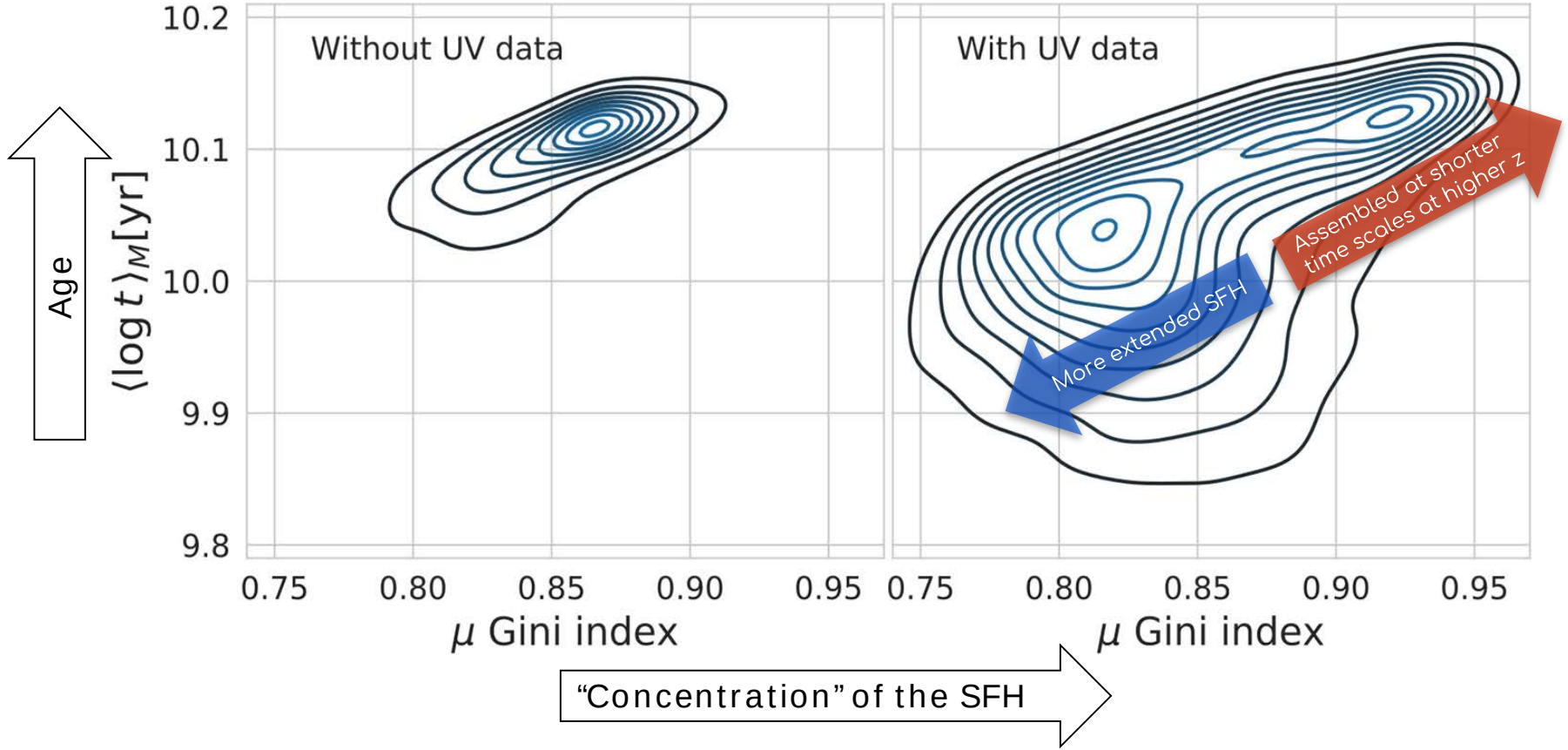
β is the UV power-law slope obtained by fitting the UV spectrum with:

$$F_\lambda = \lambda^\beta$$



Meurer et al. (1999)

A bimodality in the red sequence



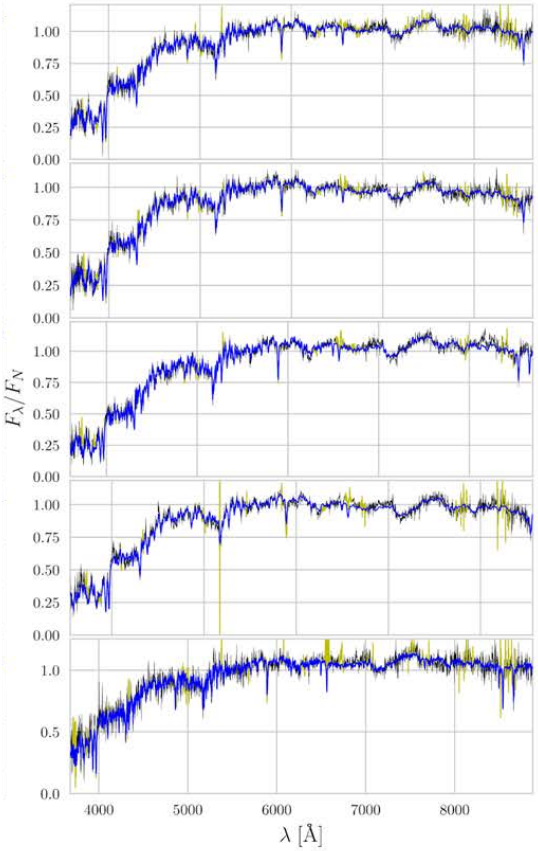
Unveiling the
afterlife of
galaxies

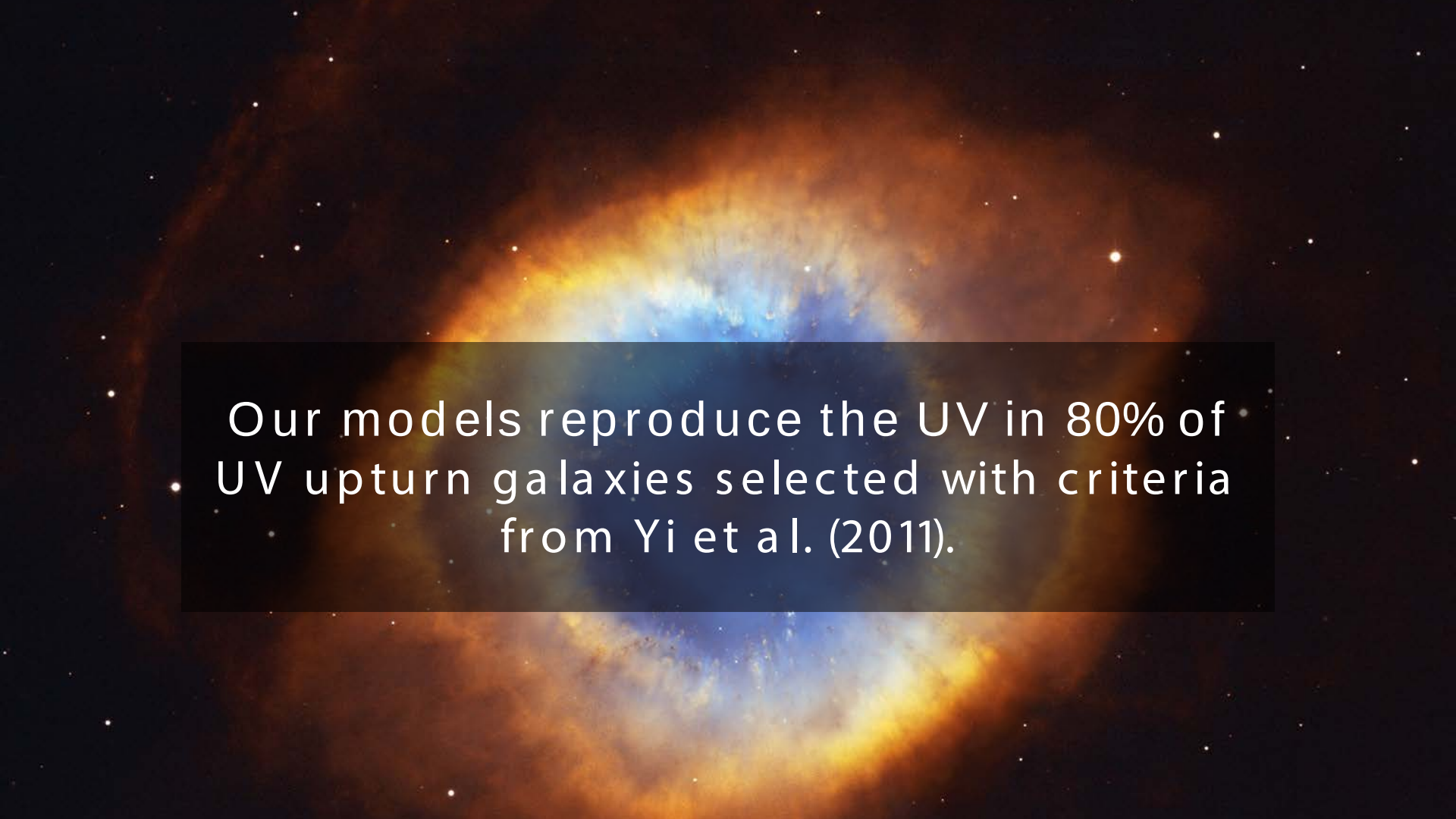
What will you be looking at?

3453 galaxies:

- With SDSS spectra
- Detected in both GALEX bands (NUV and FUV)
- Classified as elliptical by galaxy zoo
- In the red sequence (NUV-r > 5)

Spectral synthesis of ETGs

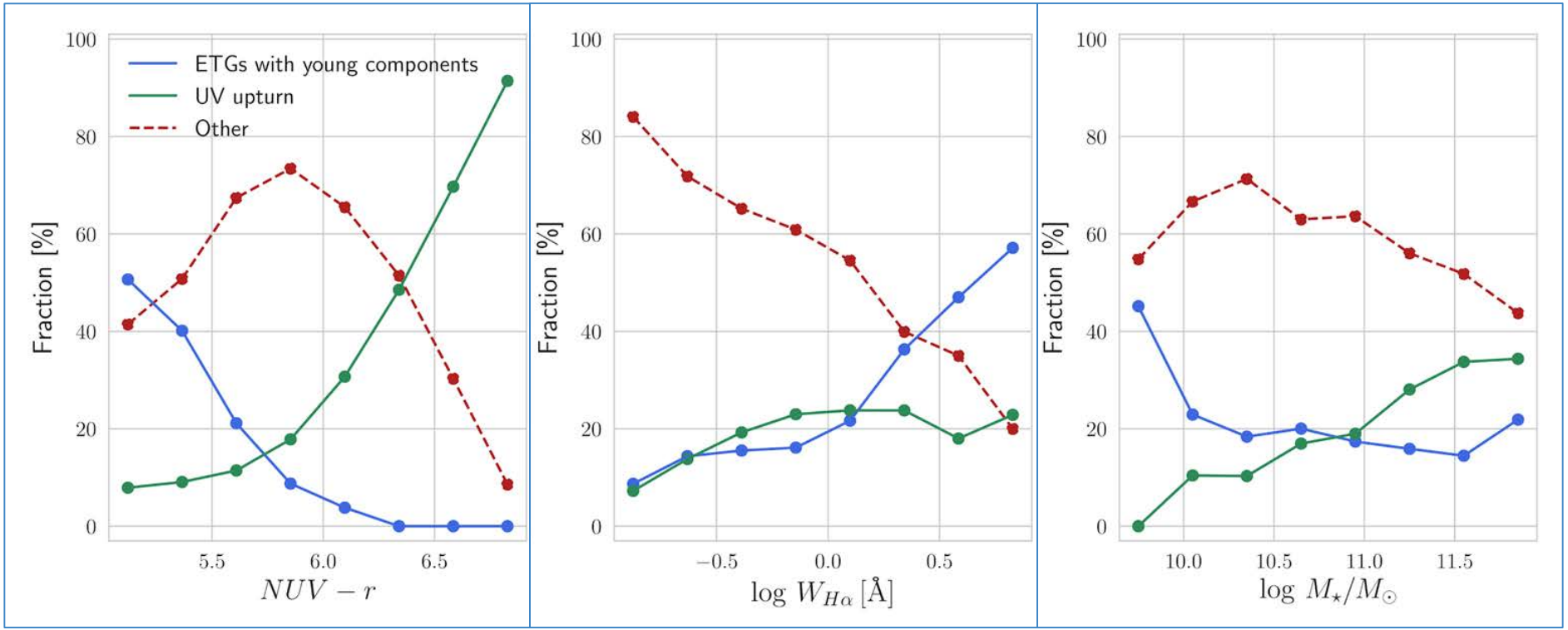



Our models reproduce the UV in 80% of UV upturn galaxies selected with criteria from Yi et al. (2011).

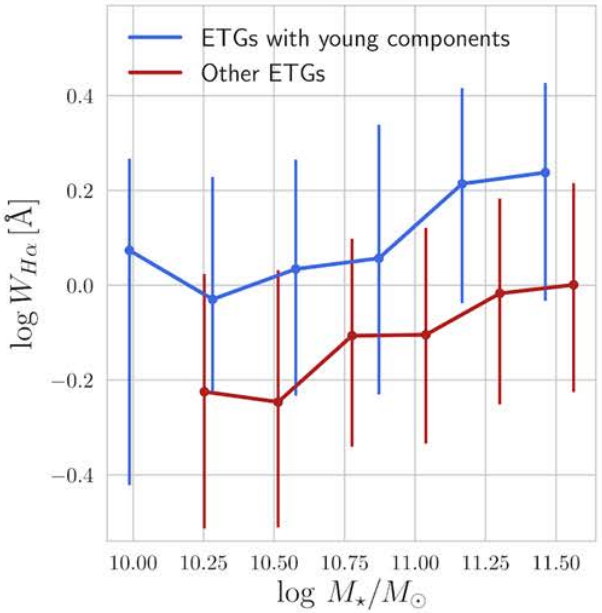
Sub-classes of ETGs

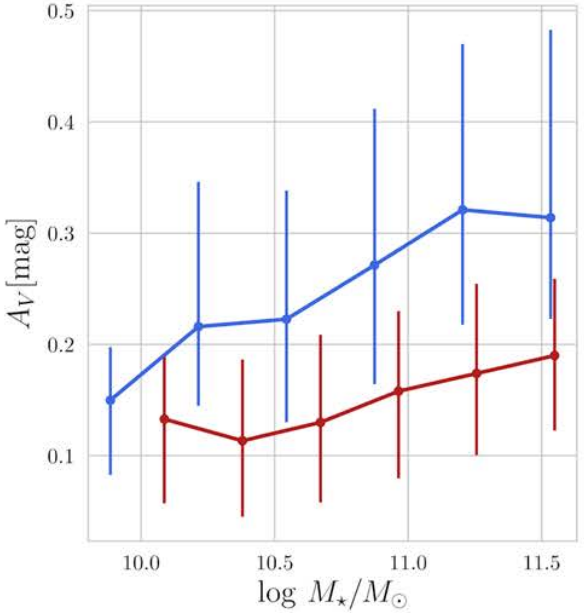
- ETGs with young components: At least 5% of FUV emission from stars younger than 1 Gyr (17.6%)
- UV upturn: No young components and FUV-NUV < 0.9 (21.6%)
- Other: None of the above (60.6%)

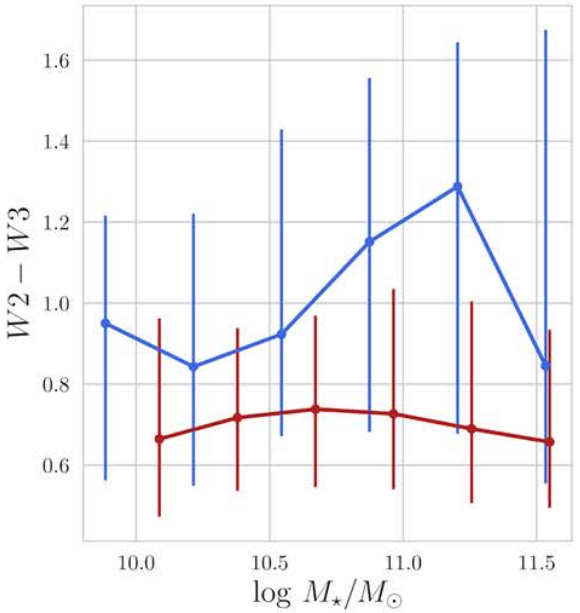
Distributions of the sub-classes



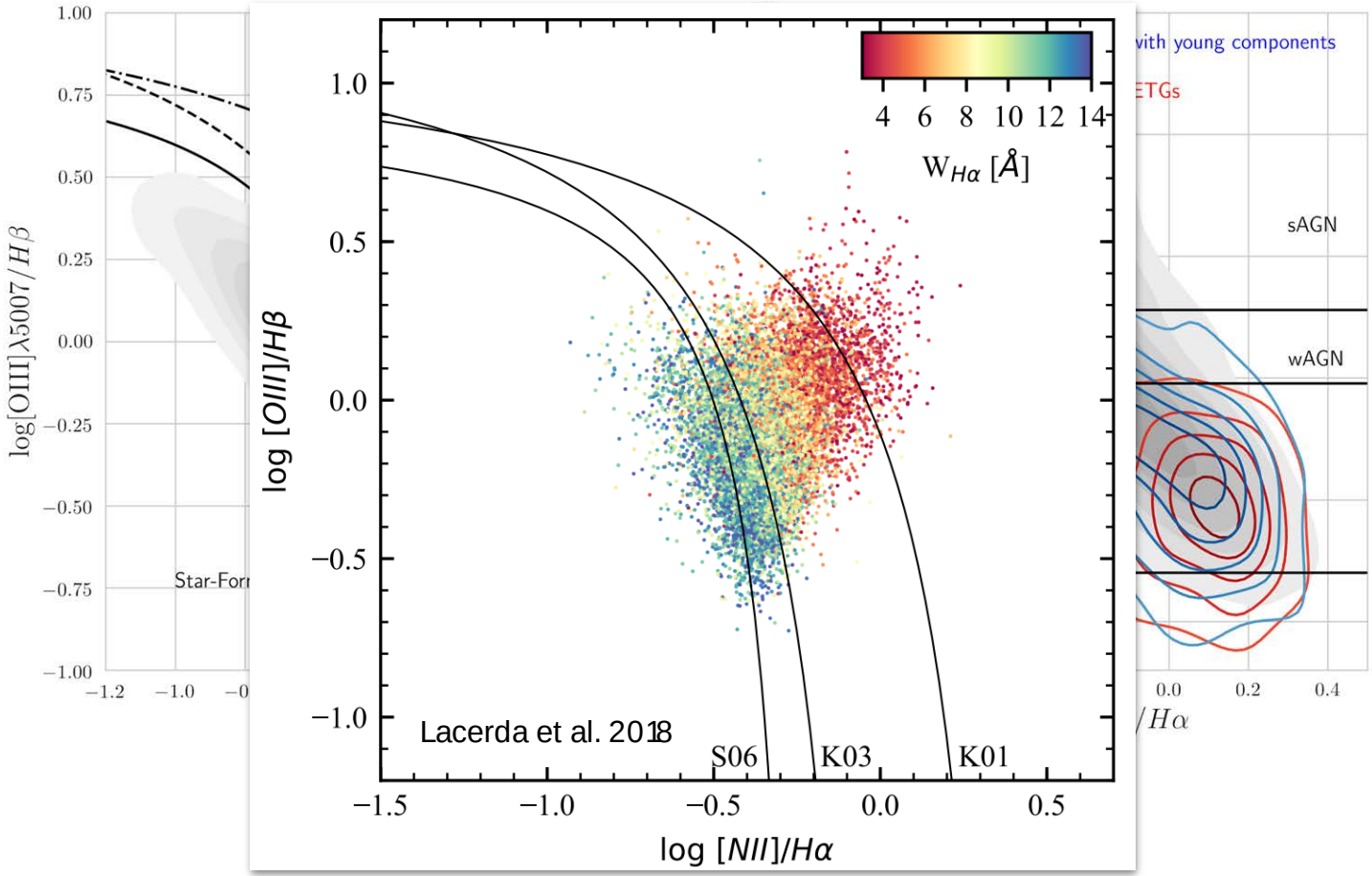
The ISM of ETGs with young components







Ionization sources: HOLMES or SF?



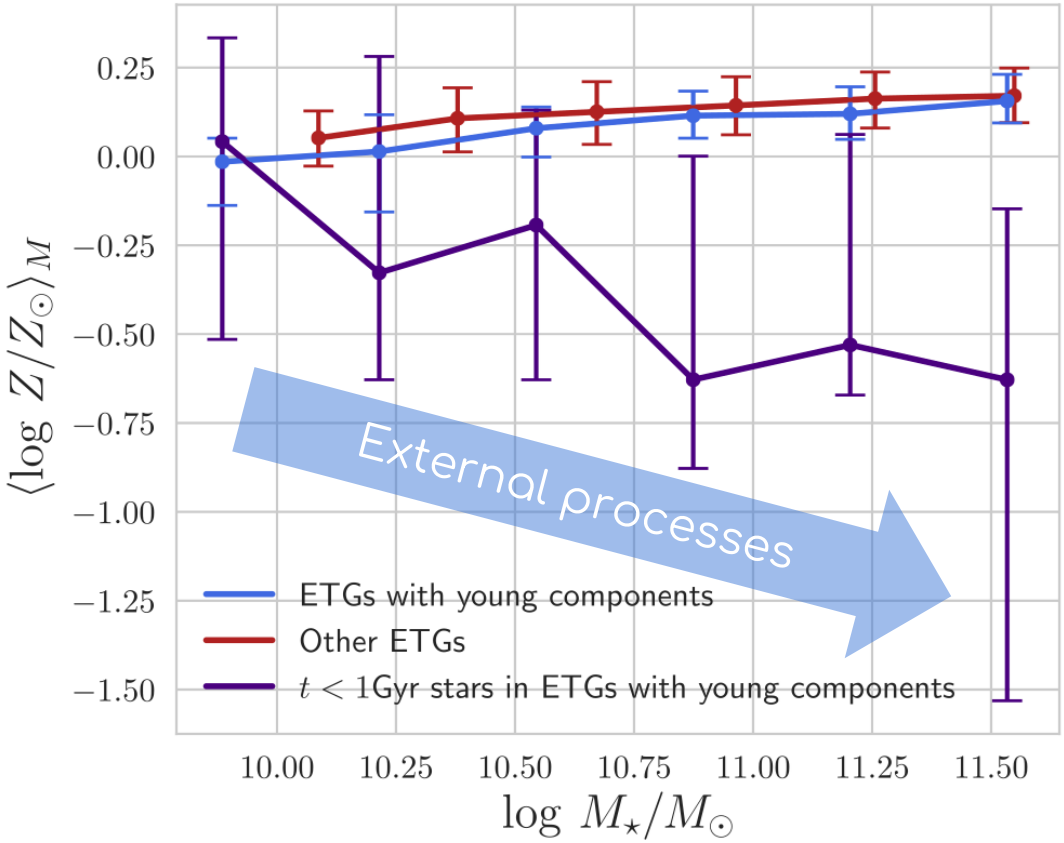
Beware! Convoluted plot ahead.

How do young components form?

Downsizing

Internal processes

Moving up **towards** the **red sequence**



Rejuvenation

External processes

Moving **towards or away from** the **red sequence**

Thank you!