The quenching of star formation activity and the evolution of the colour-magnitude relation in galaxies

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- sample of ~ **90,000** galaxy **spectra** (λ ~ 5500 - 9500 Å)
- **redshift** range 0.4 < z < 1.3
- large **angular** coverage ~ 23.5 deg^2 (over 2 sky area)

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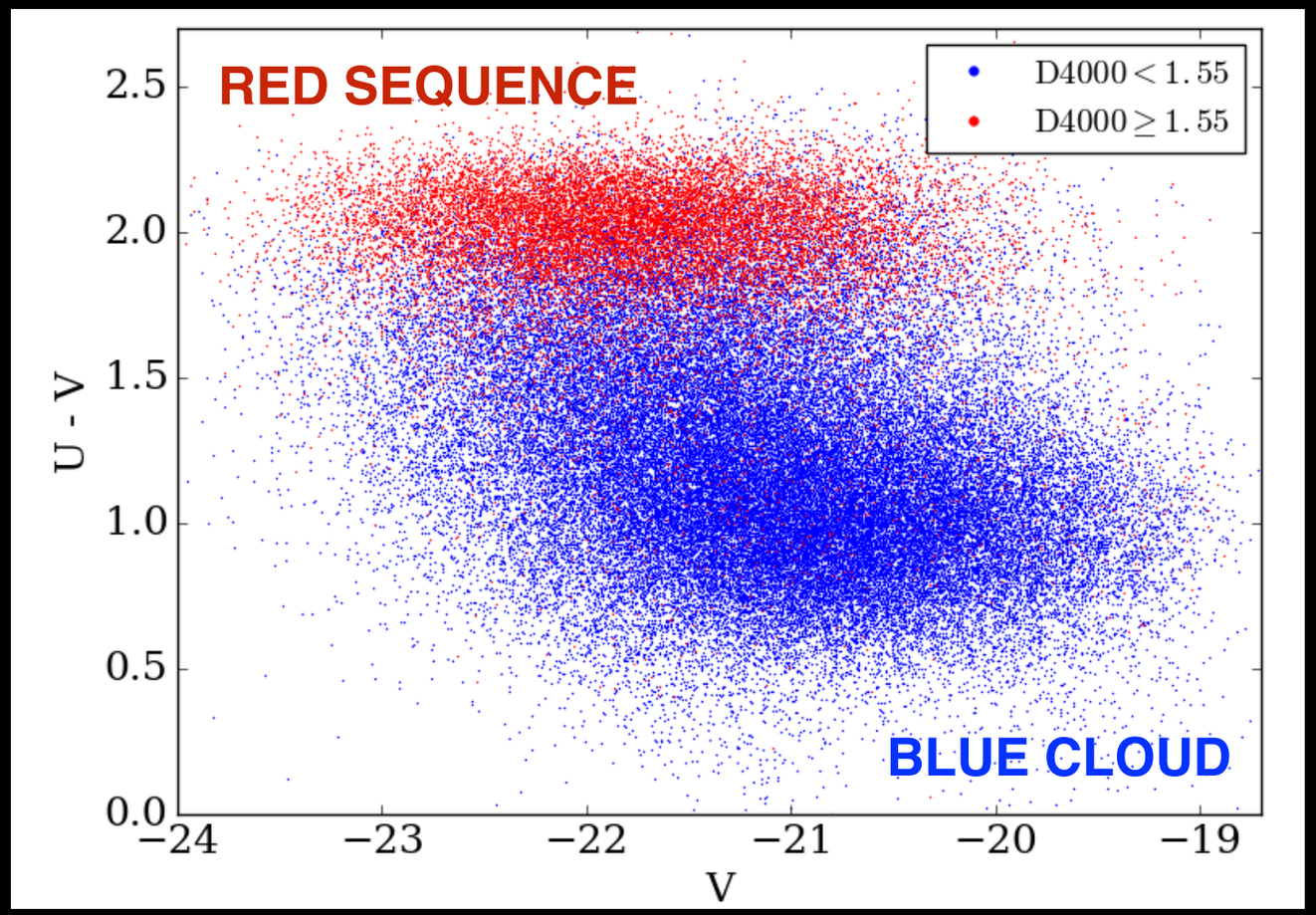

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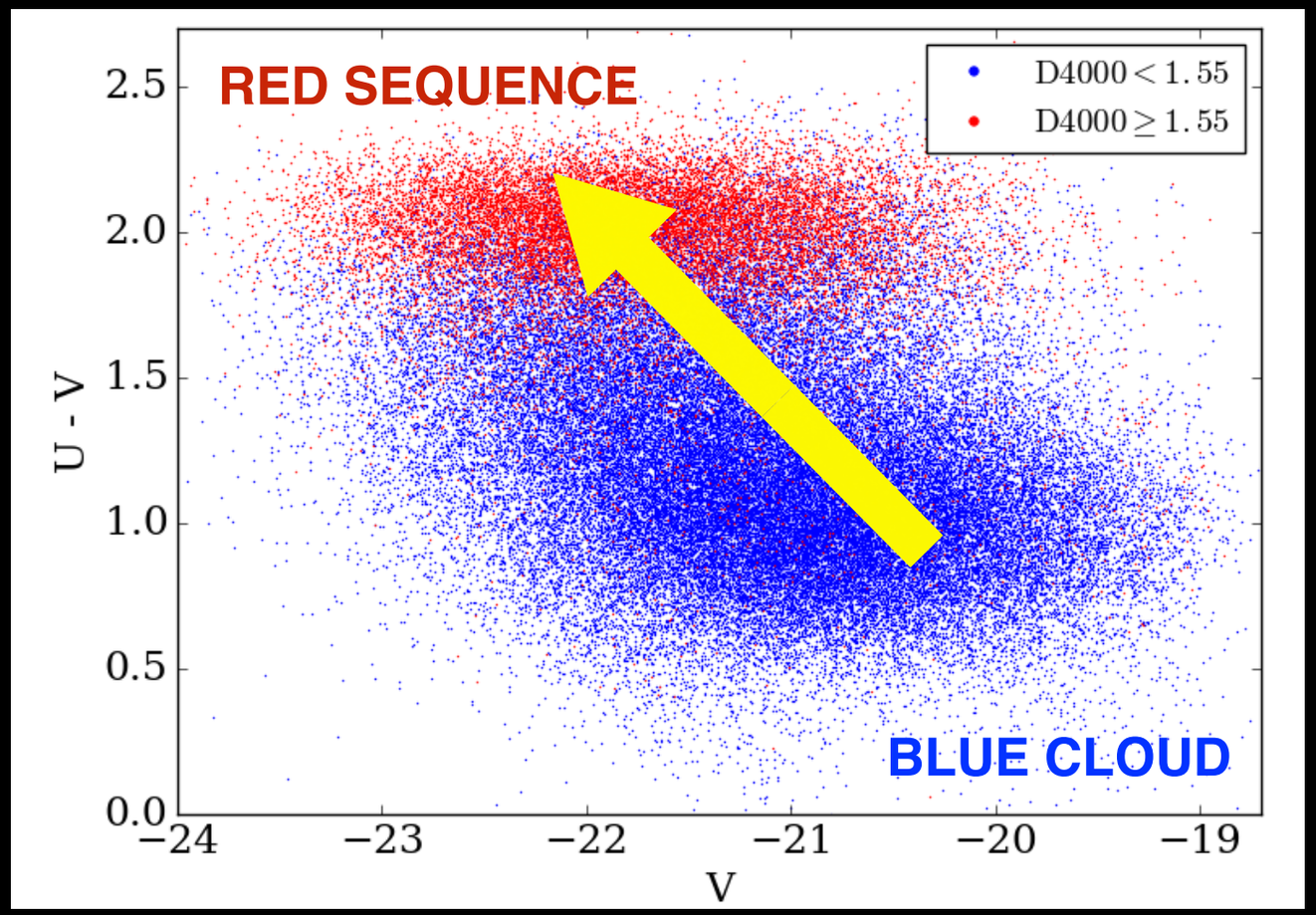

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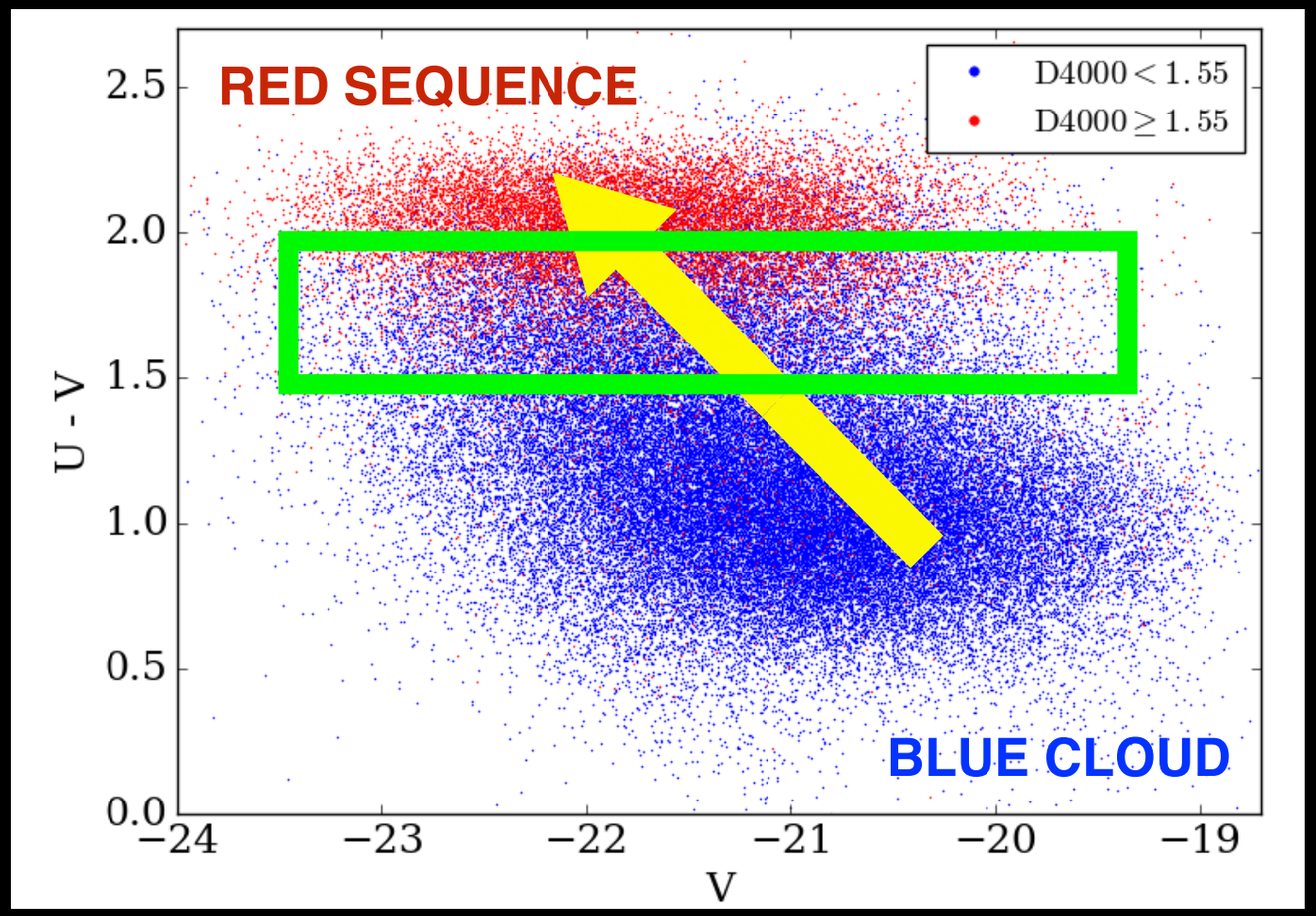

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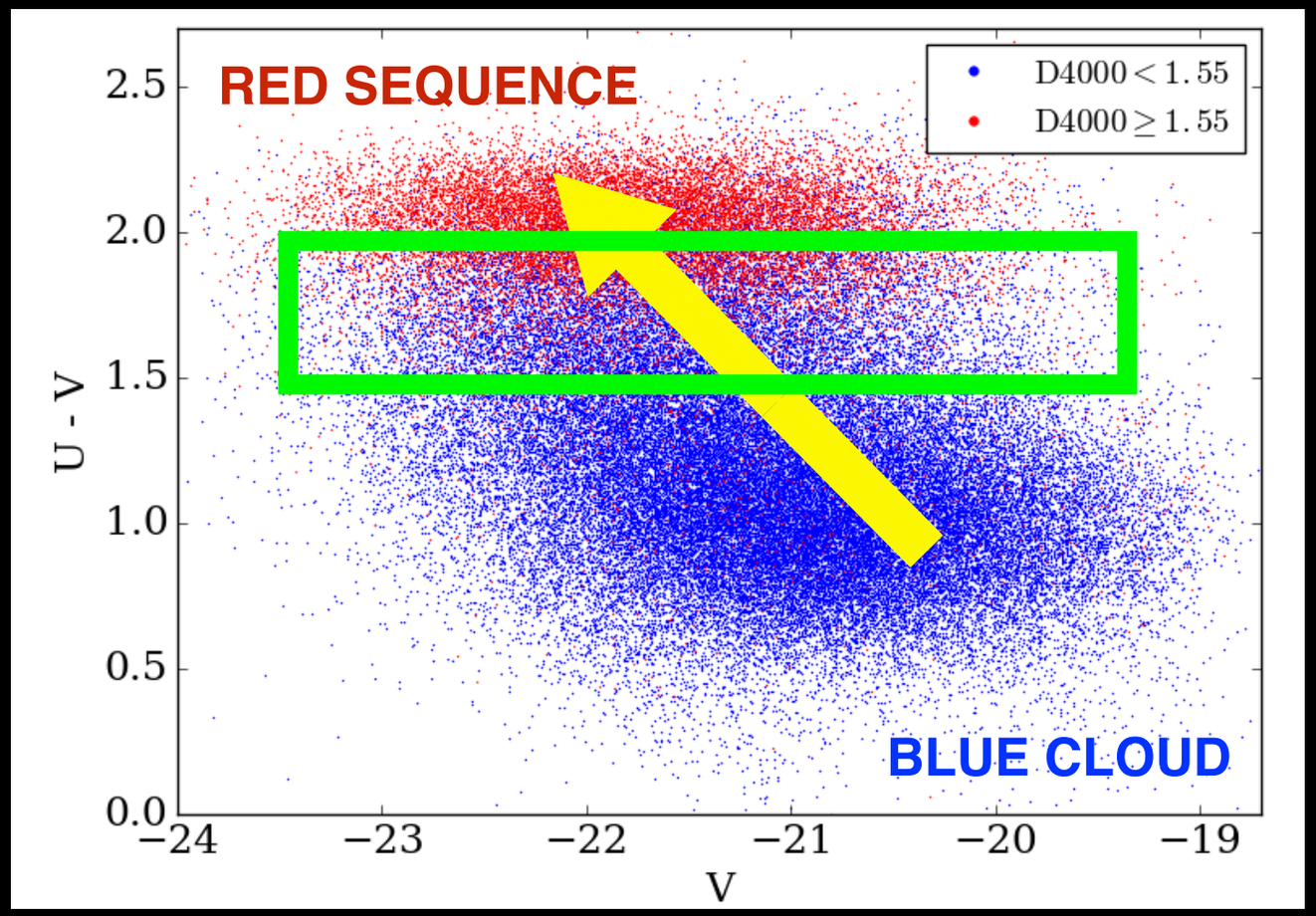


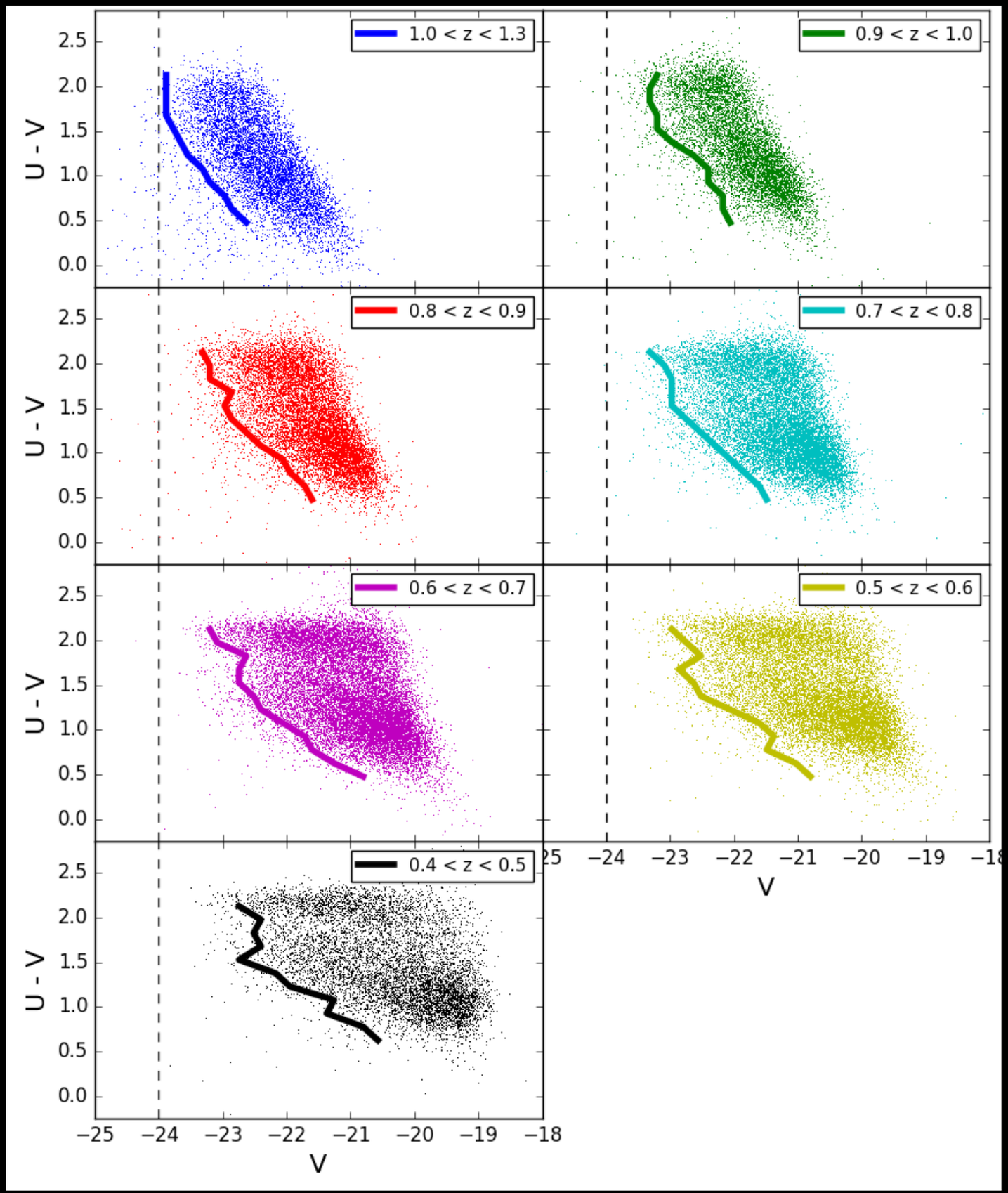
Is the <u>DEPLETION</u> of gas the <u>MAIN DRIVER</u> of this transition?

VIPERS observed **colour-magnitude**

past

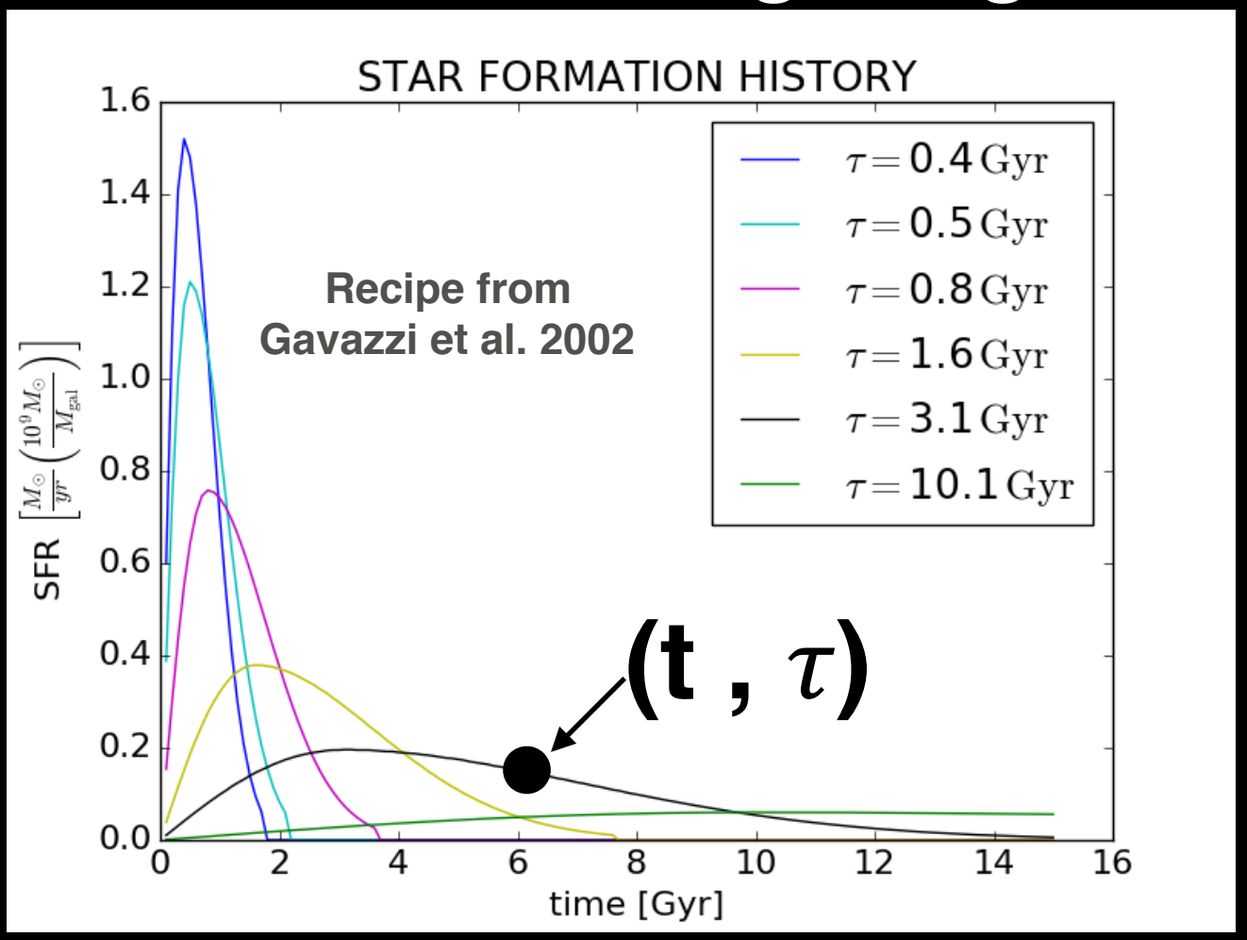
time

present



- Population of **high SF** galaxies **not observed** today
- edge fixed at a **percentage drop** in number density

Assigining a SFH to each galaxy



1. **PEGASE templates** built on exponentially delayed SFH

$$SFR(t,\tau) = \frac{t}{\tau^2}\exp\left[-\frac{t^2}{2\tau^2}\right]$$

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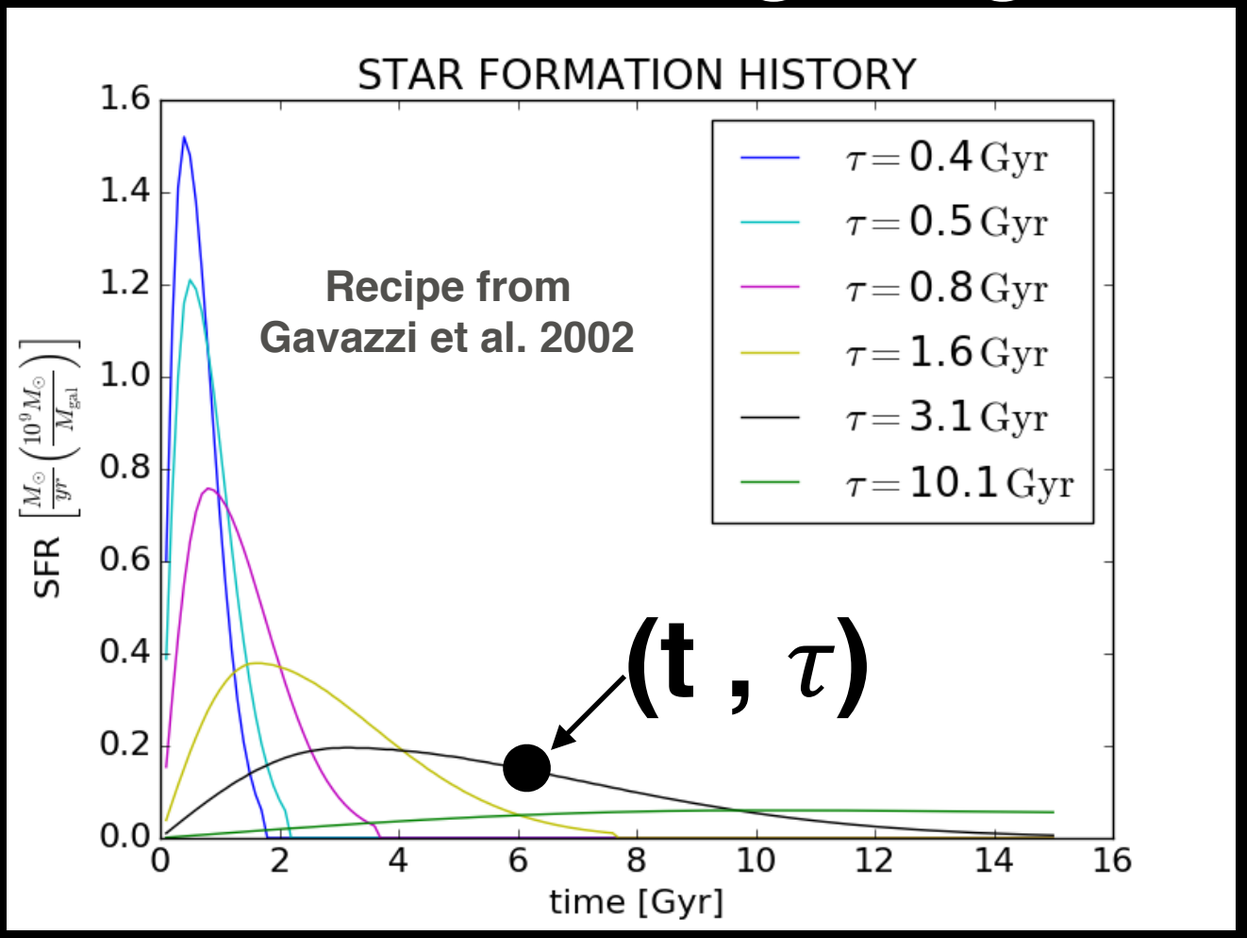

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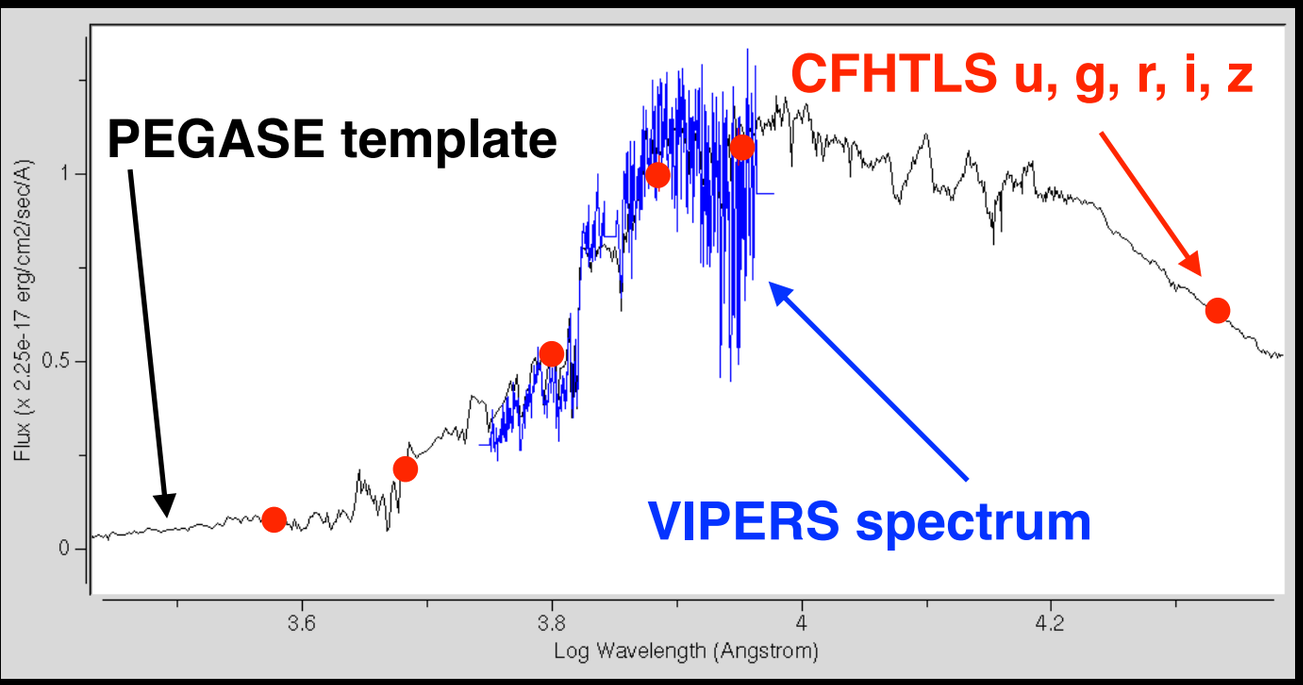


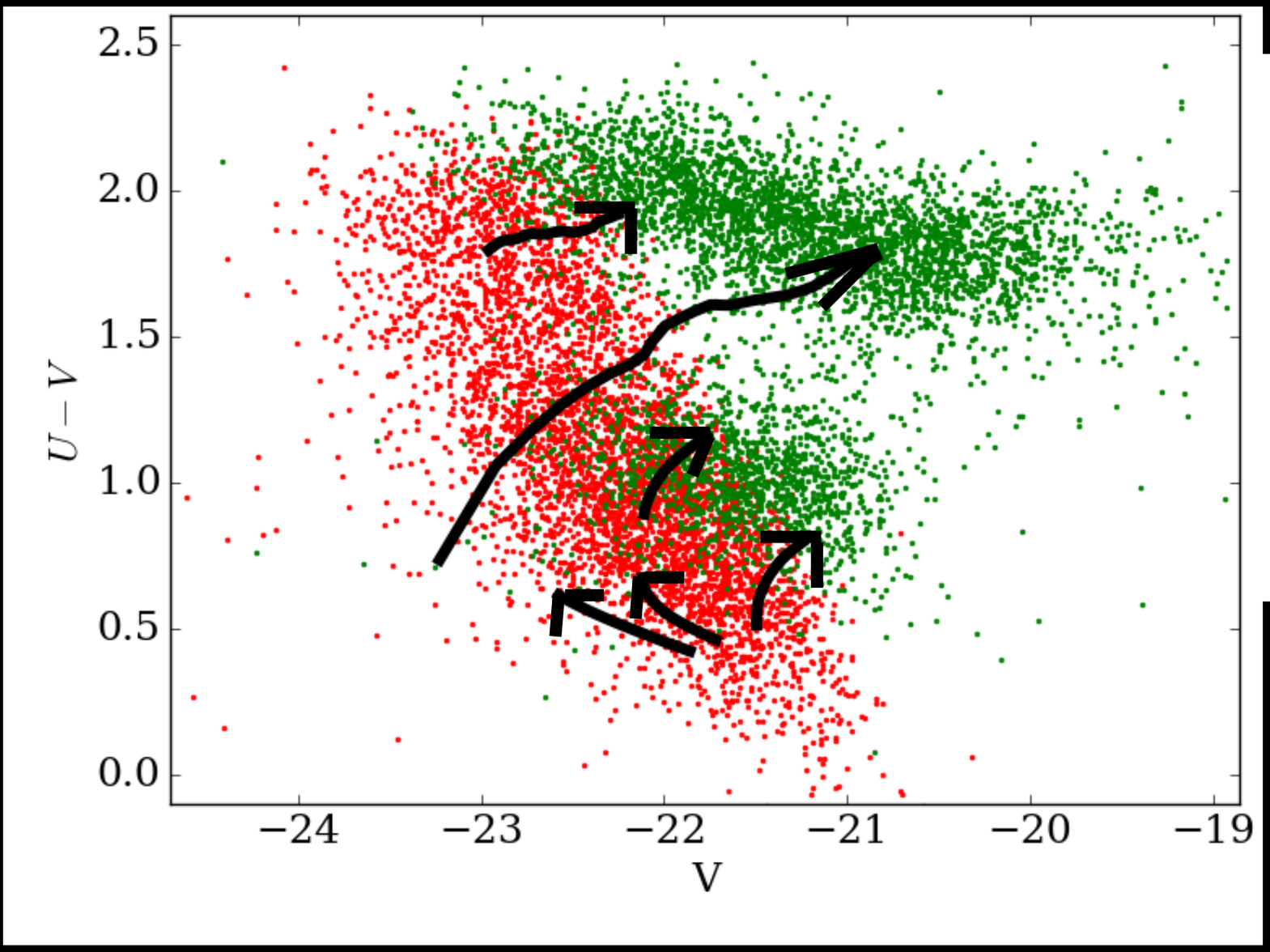
2. **SED fitting** find the best PEGASE template which match the observed **spectrum** and the **photometric points**

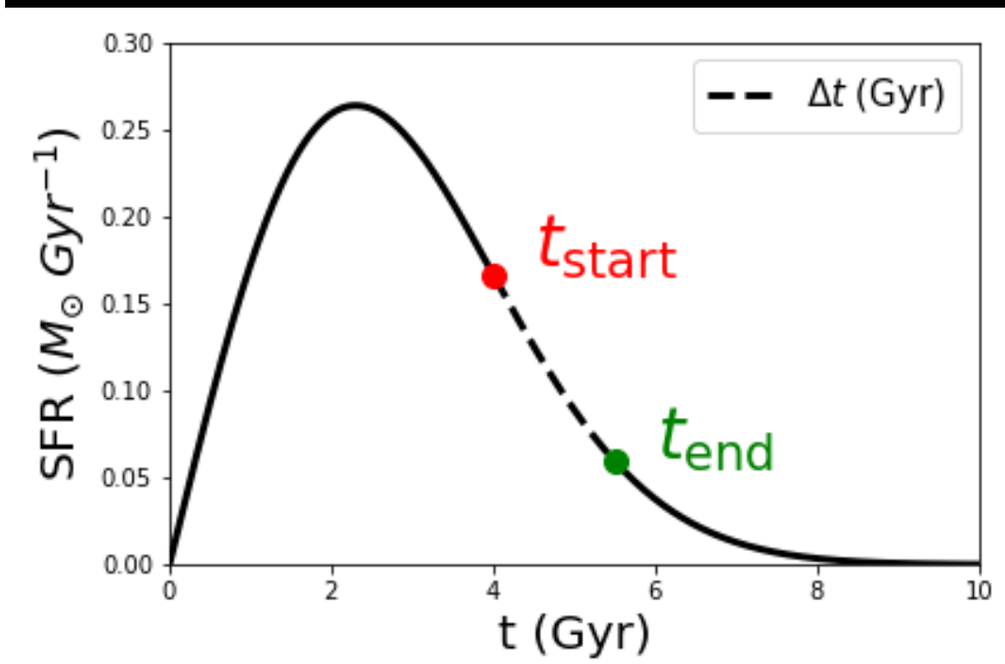
Synthetic evolution - SFH exponentially delayed

$z_{start} \simeq$ 1.15 (OBSERVED)

$z_{end} \simeq$ 0.47 (PREDICTED)

$\Rightarrow \quad \Delta t \simeq 3.26$ Gyr

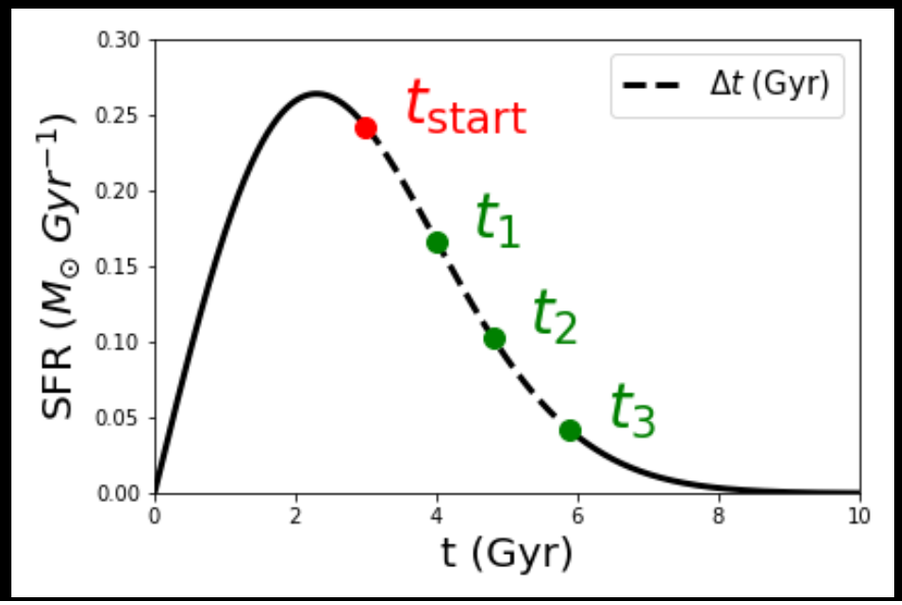


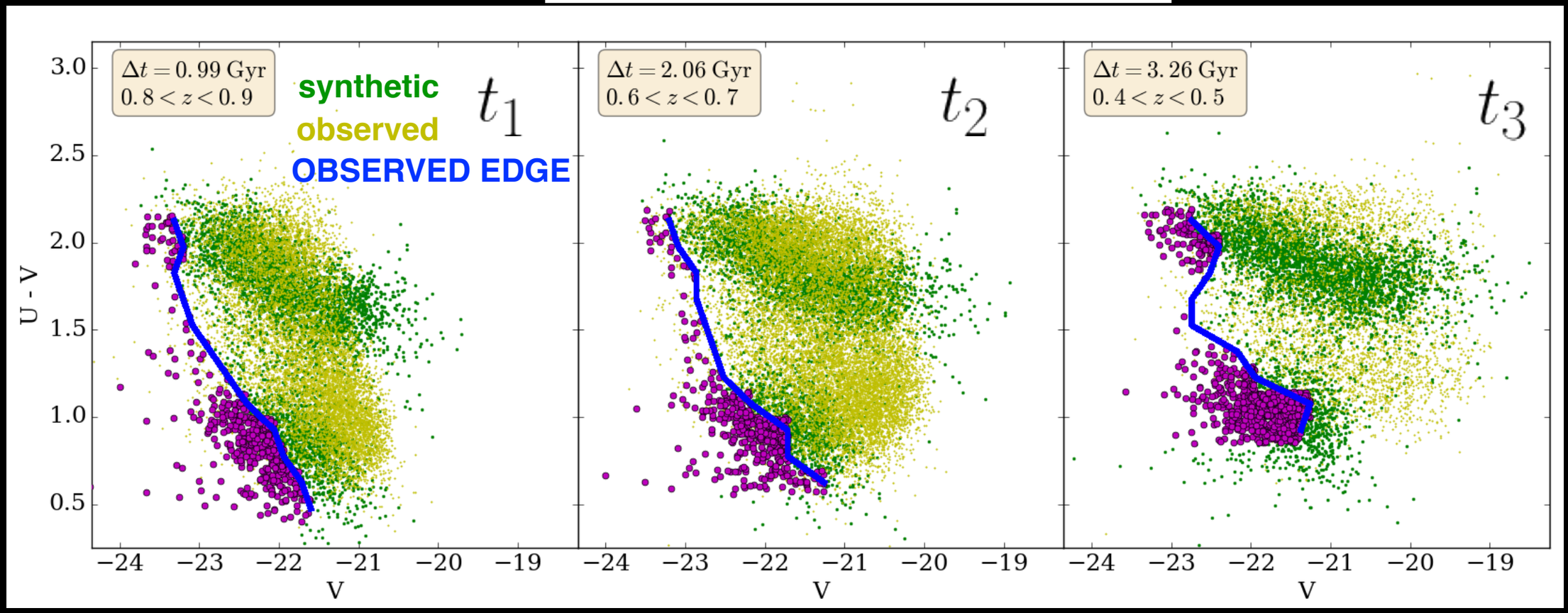


The SED fitting provides **(t_{start}, τ)** for each galaxy

Synthetic evolution - SFH exponentially delayed

Start = 1.0 < z < 1.3





Clear excess of predicted bright/blue galaxies

TOY-MODELS --- SFH with QUENCH at the **observed cosmic time**

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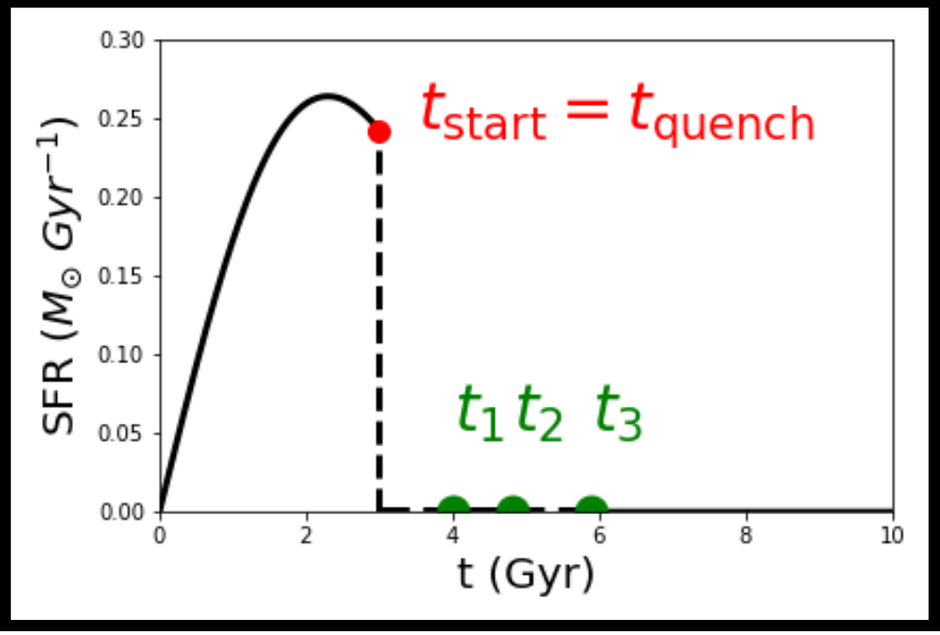
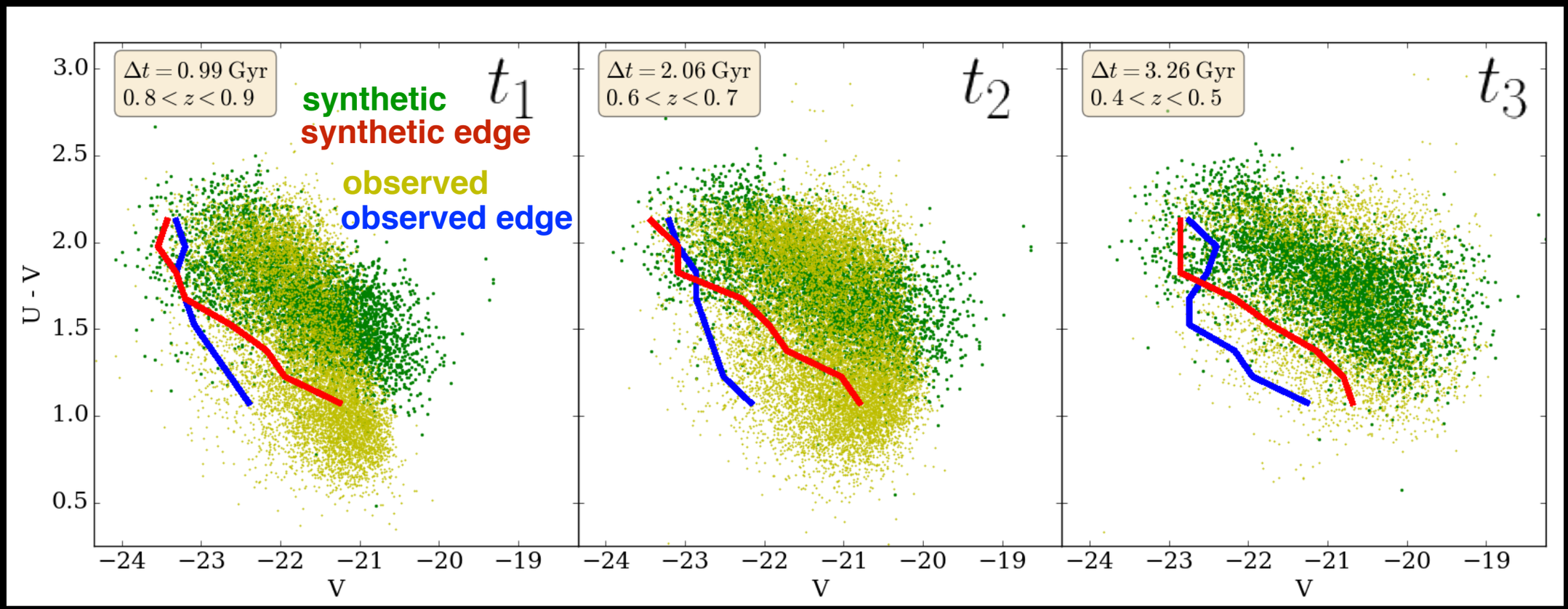


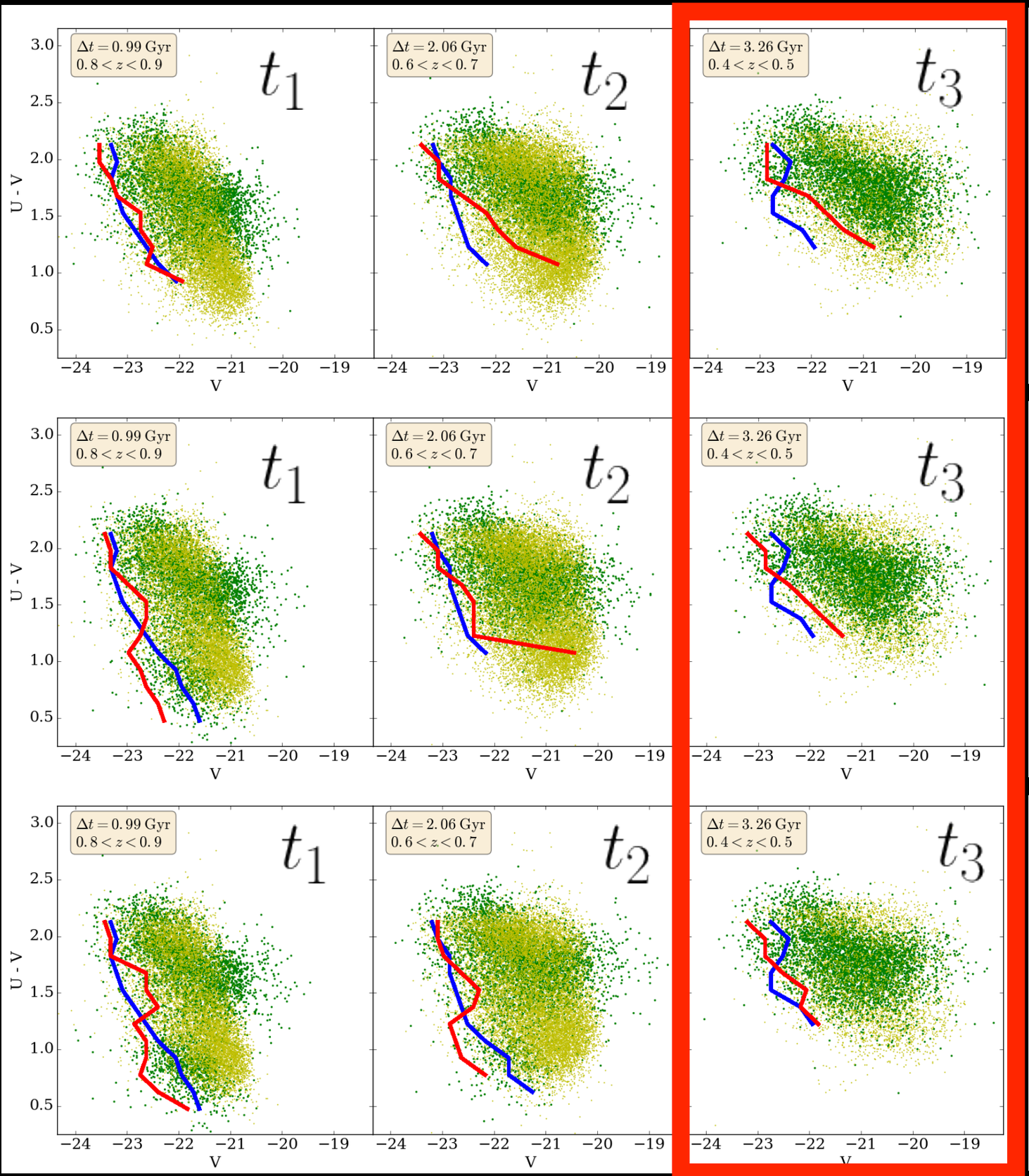


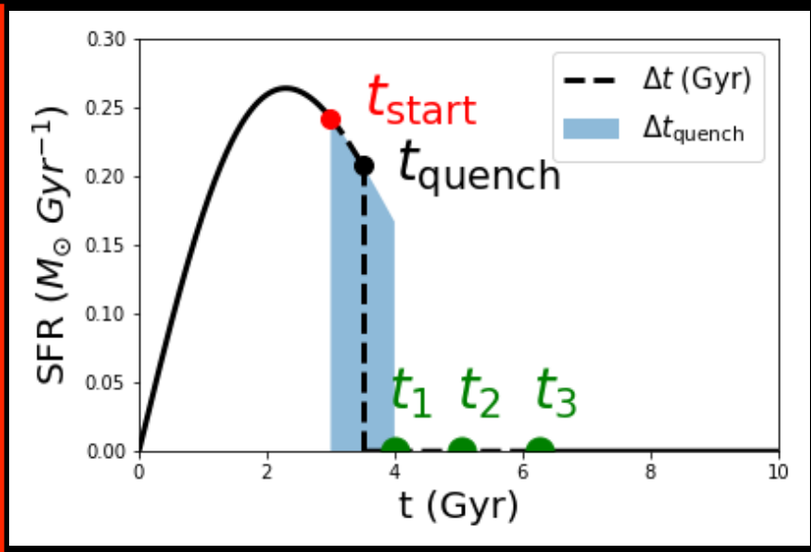
SFH **QUENCHED** within **1, 2, 3 Gyr** after the **observed cosmic time**

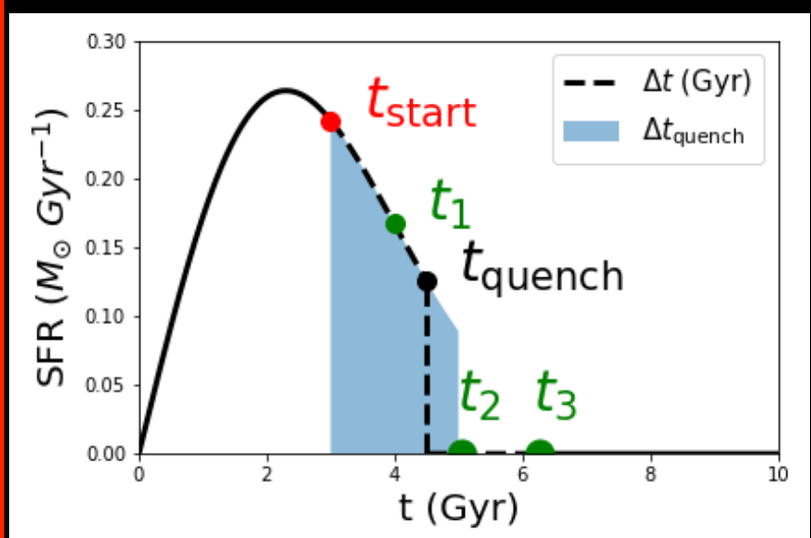
< 1 Gyr

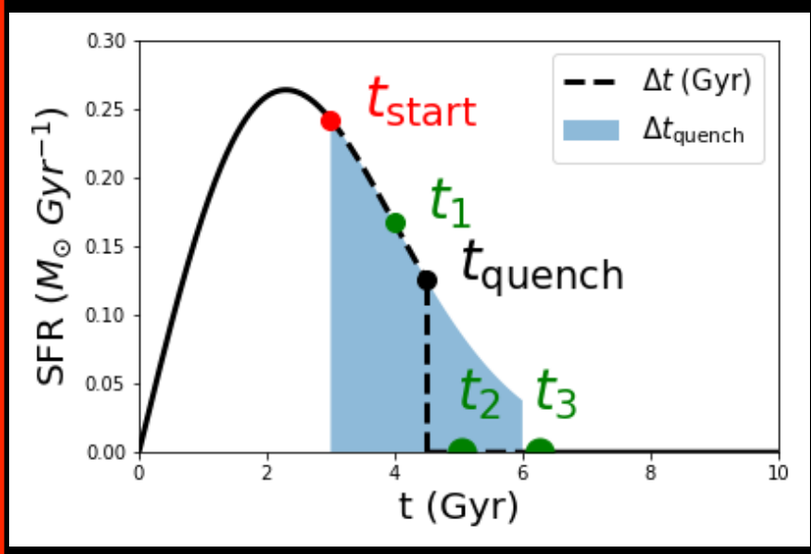
< 2 Gyr

< 3 Gyr









Summary and future works

- A **quenching event is required** at least for bright galaxies **near the bright edge** (at all U - V colours) with quenching spread in 2 to **3 Gyr.**

- Use **Semi-Analytic Models** (GALFORM) to vary the **physics** (e.g. AGN feedback) and probe the relation **progenitor / descendant**