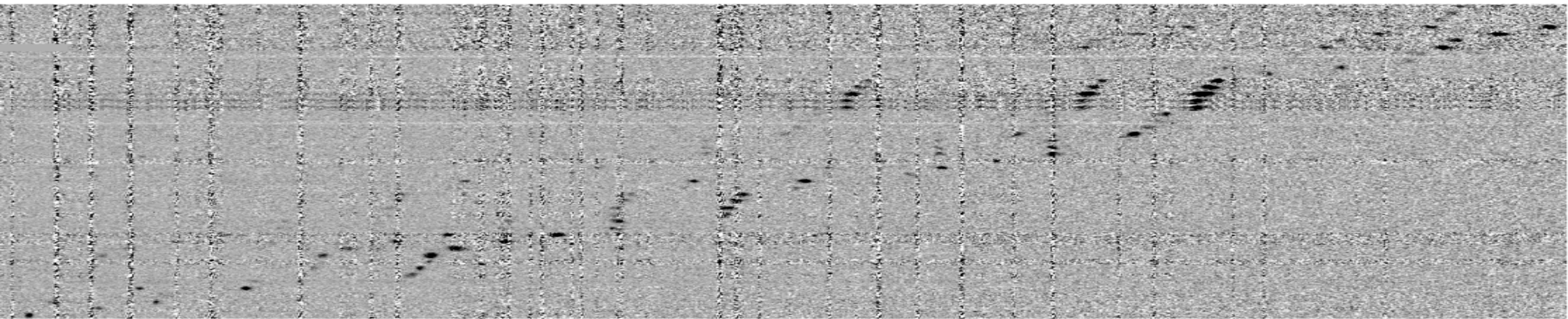


MOSEL : Near-Infrared Spectroscopy of Emission Line Galaxies at $3 < z < 4$



Kim-Vy Tran
University of New South Wales
Australian Astronomical Obs.
Texas A&M University

zfouge.tamu.edu
zfire.swinburne.edu.au

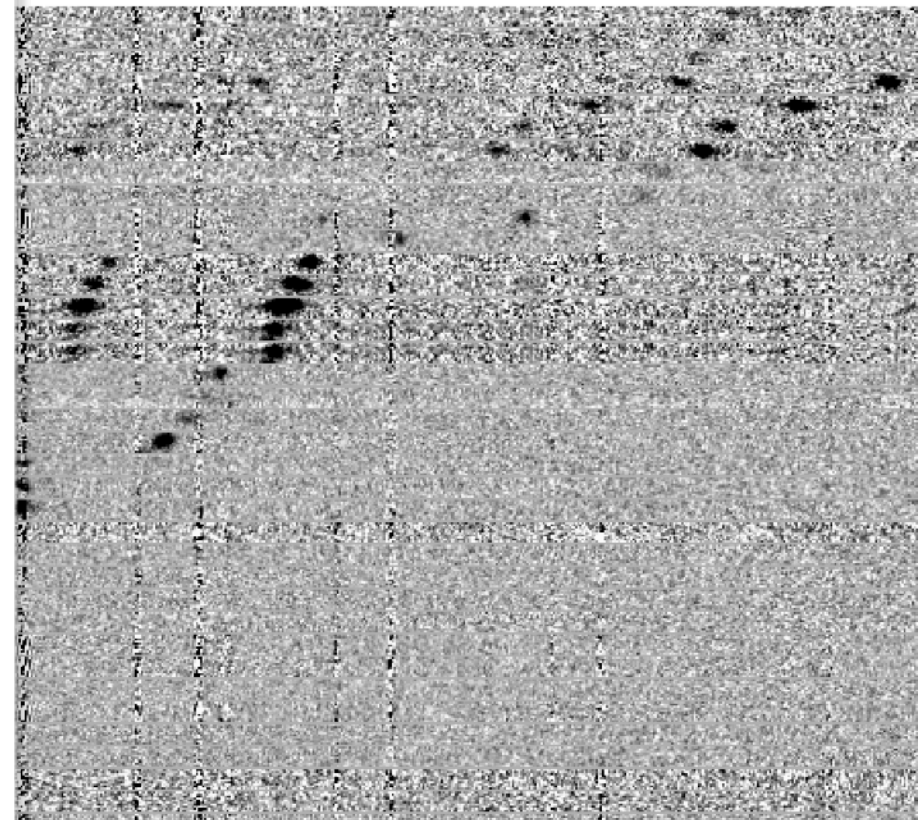
Strong ELGs @ $3 < z < 4$



Keck

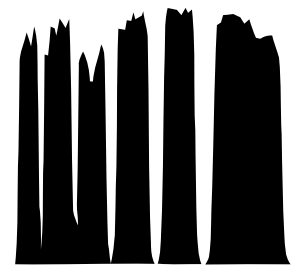


MOSFIRE Emission Line Survey



Multi-Object Spectroscopic
Emission Line Survey

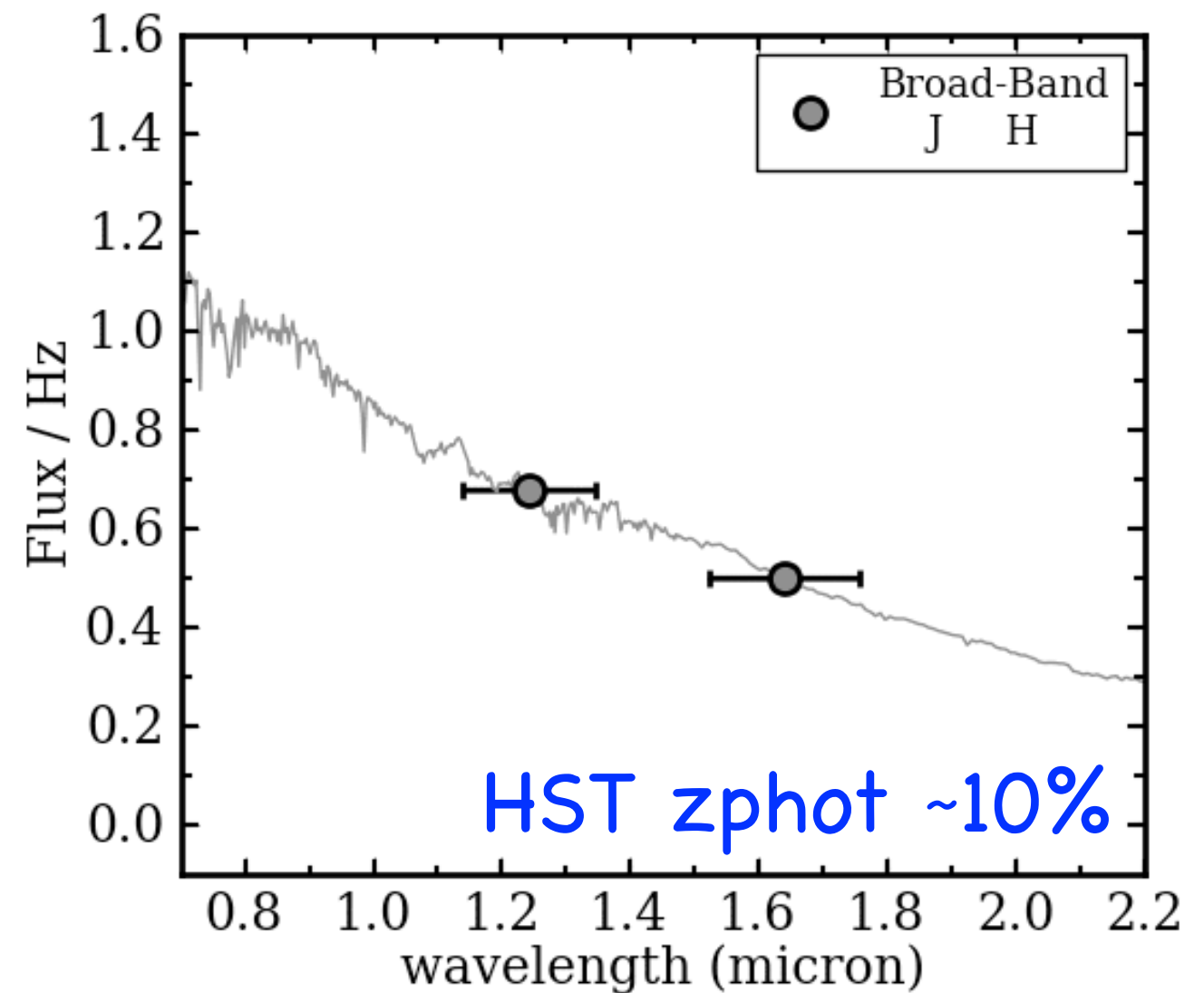
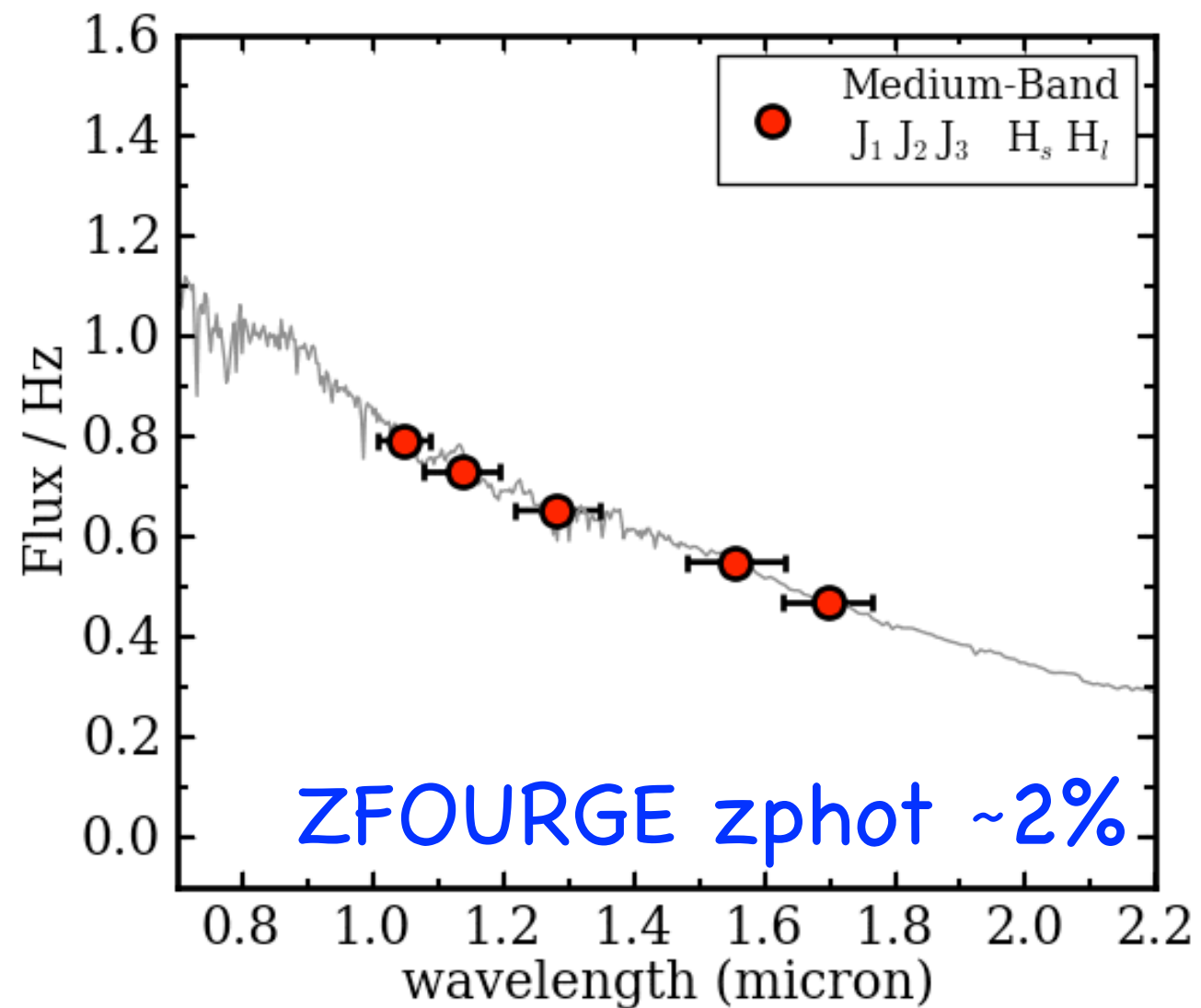
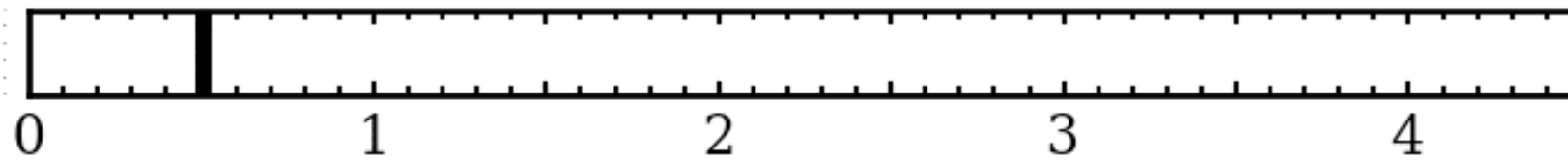




ZFOURGE

FourStar Galaxy Evolution Survey

Redshift



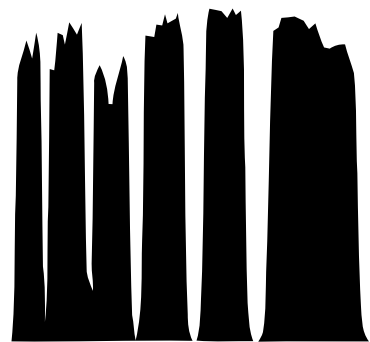
credit: A. Tomczak — zfourage.tamu.edu

ZFOURGE Near-Infrared Imaging Survey

Ivo Labbé, Kim-Vy Tran, Casey Papovich, Ryan Quadri,
Carolinestraatman, Adam Tomczak, Vithal Tilvi, Nancy
Kawinwanichakij, Ben Forrest, Leo Alcorn, Jonathan Cohn,
Rebecca Allen, Lee Spitler, Glenn Kacprzak, Themiya
Nanayakkara, Glen Rees, Michael Cowley, Karl
Glazebrook, Eric Persson, Pat McCarthy, Andy Monson,
Pieter van Dokkum

ZFIRE & MOSEL Near-Infrared Spectroscopy Surveys

Kim-Vy Tran, Karl Glazebrook, Lisa Kewley, Leo Alcorn,
Ben Forrest, Jonathan Cohn, Michael Cowley, Glenn
Kacprzak, Themiya Nanayakkara, Lee Spitler, Tiantian
Yuan, Ivo Labbé, Casey Papovich, Carolinestraatman



ZFOURGE

FourStar Galaxy Evolution Survey

CANDELS/COSMOS

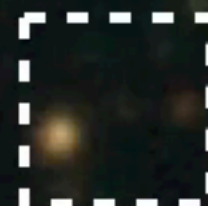
CANDELS/GOODS-S

CANDELS/UDS

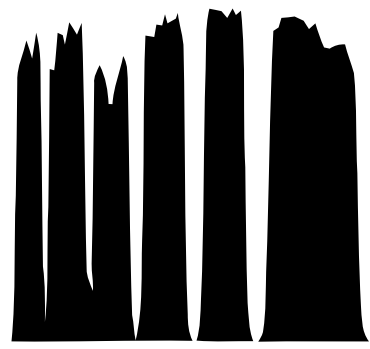
zfourge.tamu.edu

ZFOURGE
Survey

Optical Wavelengths Only

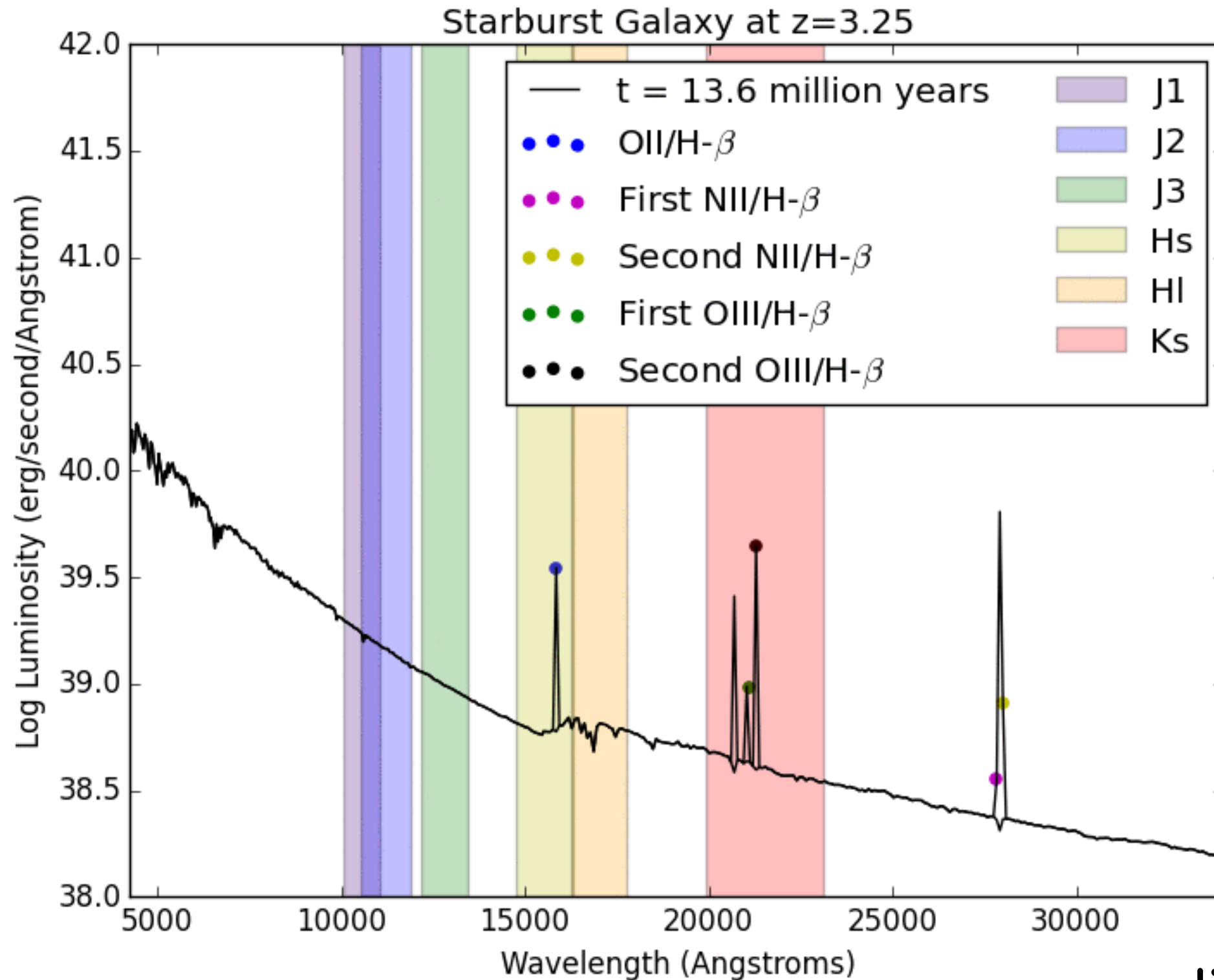


credit: K. Tran



ZFOURGE

FourStar Galaxy Evolution Survey



credit: M. Apfel

ZFOURGE Near-Infrared Imaging Survey

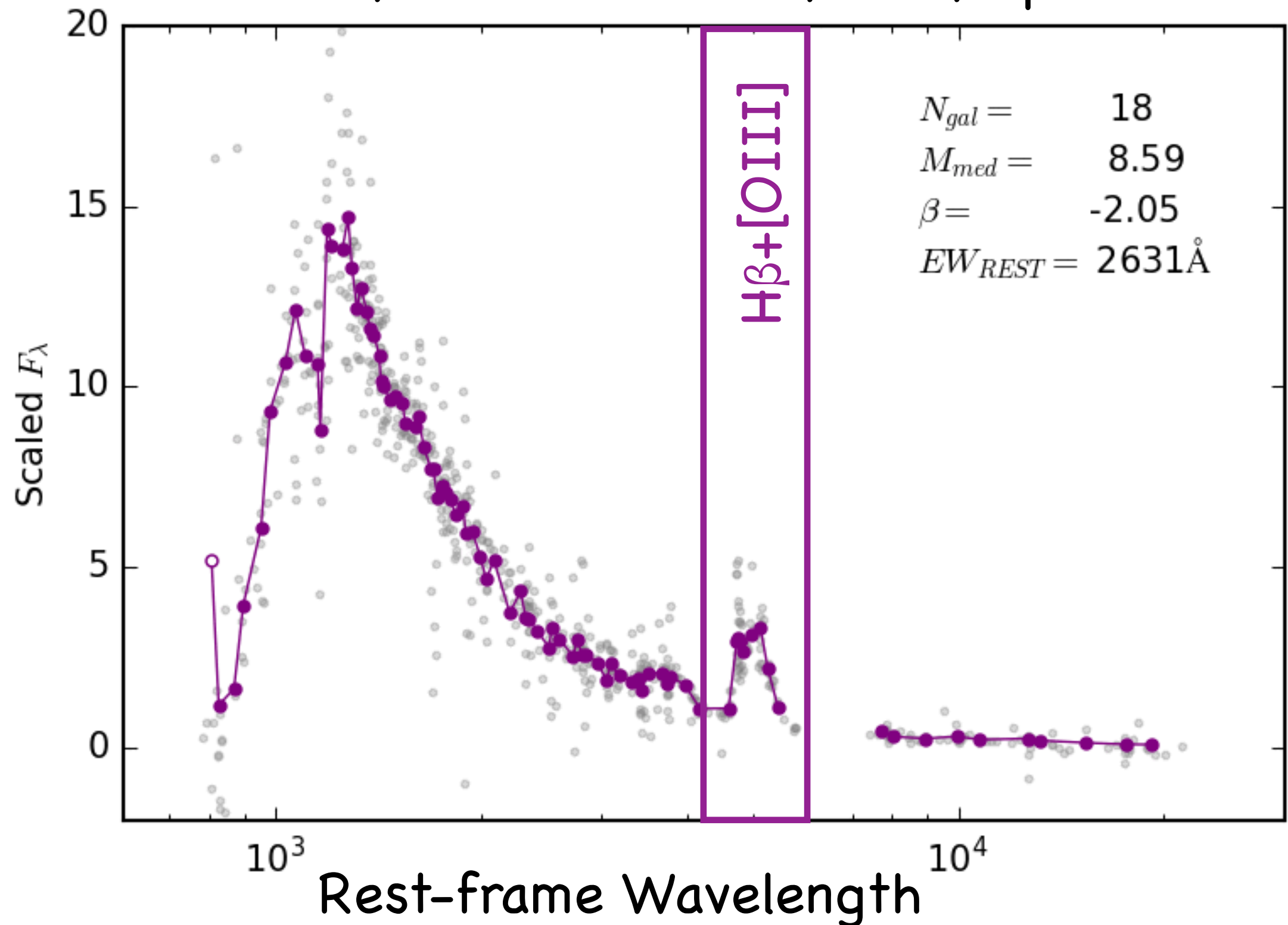
Ivo Labbé, Kim-Vy Tran, Casey Papovich, Ryan Quadri, Carolinestraatman, Adam Tomczak, Vithal Tilvi, Nancy Kawinwanichakij, Ben Forrest, Leo Alcorn, Jonathan Cohn, Rebecca Allen, Lee Spitler, Glenn Kacprzak, Themiya Nanayakkara, Glen Rees, Michael Cowley, Karl Glazebrook, Eric Persson, Pat McCarthy, Andy Monson, Pieter van Dokkum

ZFIRE & MOSEL Near-Infrared Spectroscopy Surveys

Kim-Vy Tran, Karl Glazebrook, Lisa Kewley, Leo Alcorn, Ben Forrest, Jonathan Cohn, Michael Cowley, Glenn Kacprzak, Themiya Nanayakkara, Lee Spitler, Tiantian Yuan, Ivo Labbé, Casey Papovich, Carolinestraatman

Composite SEDs: $2.5 < z < 4.0$

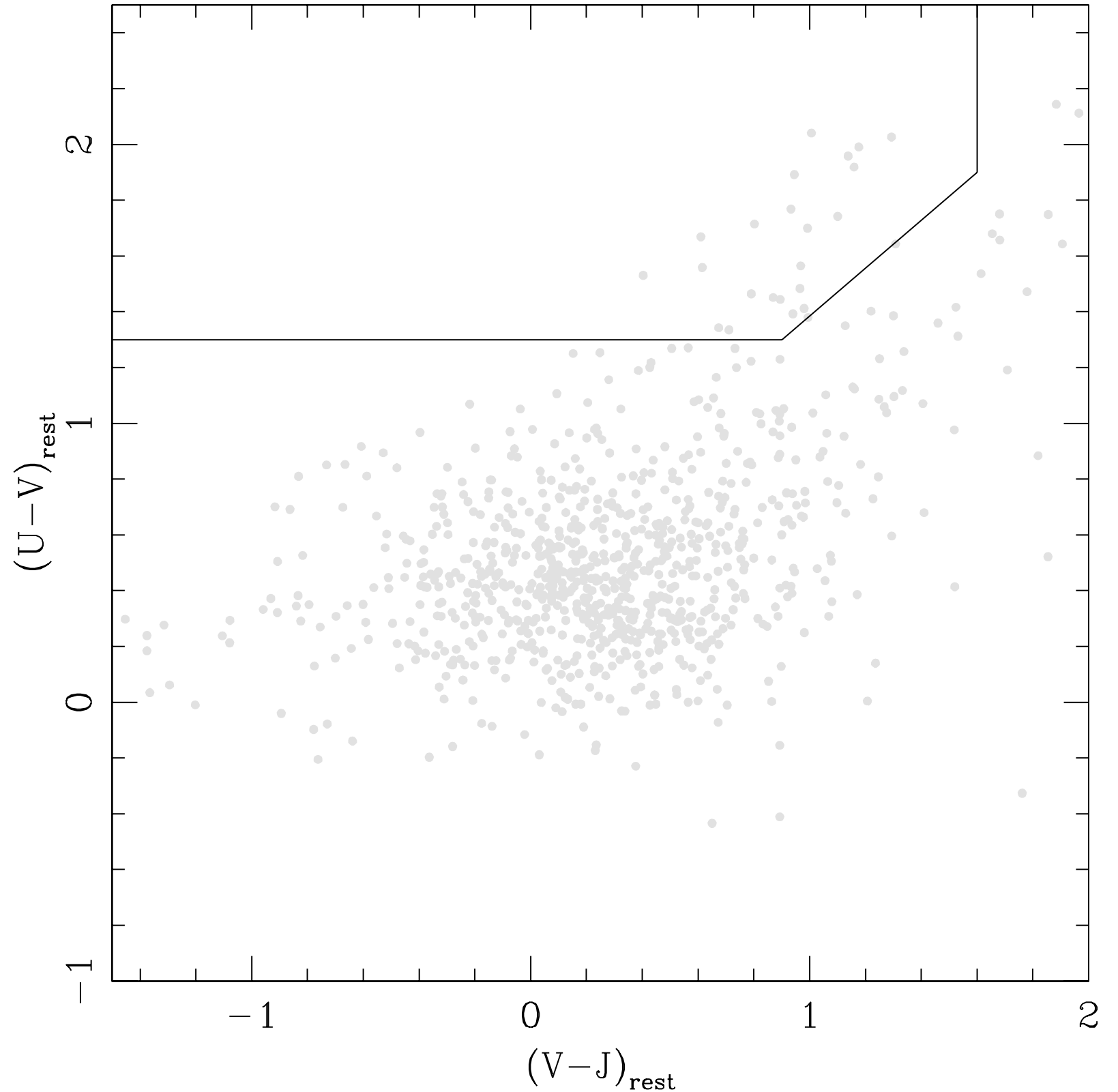
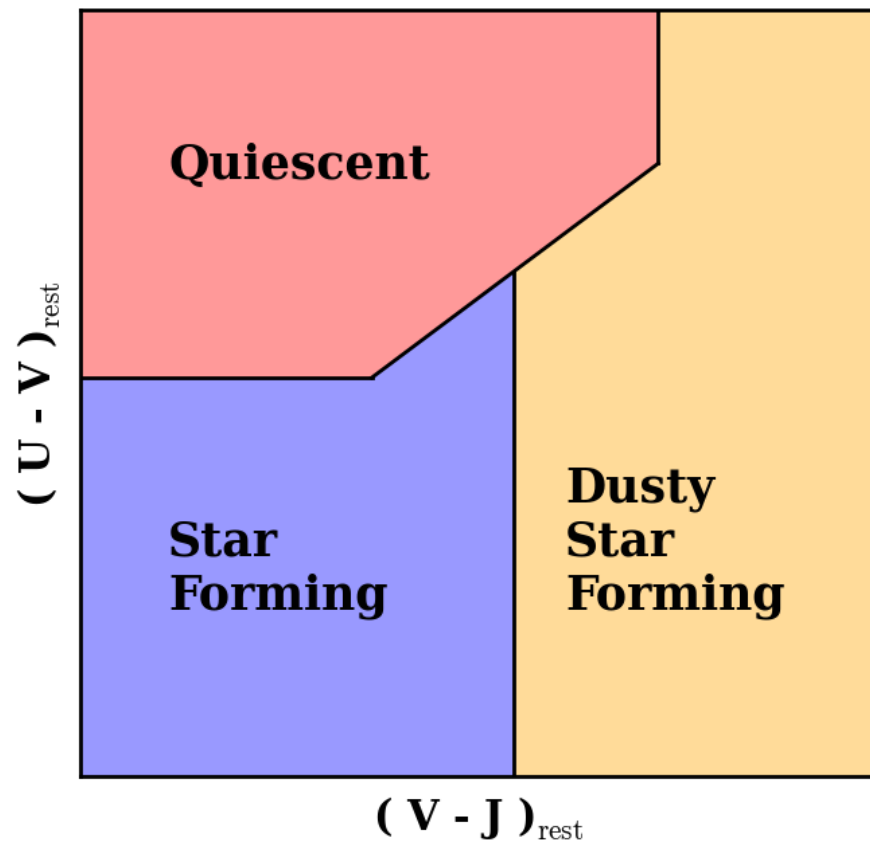
Forrest, Tran et al. 2016, 2017, ApJL



MOSEL @ $3 < z < 4$

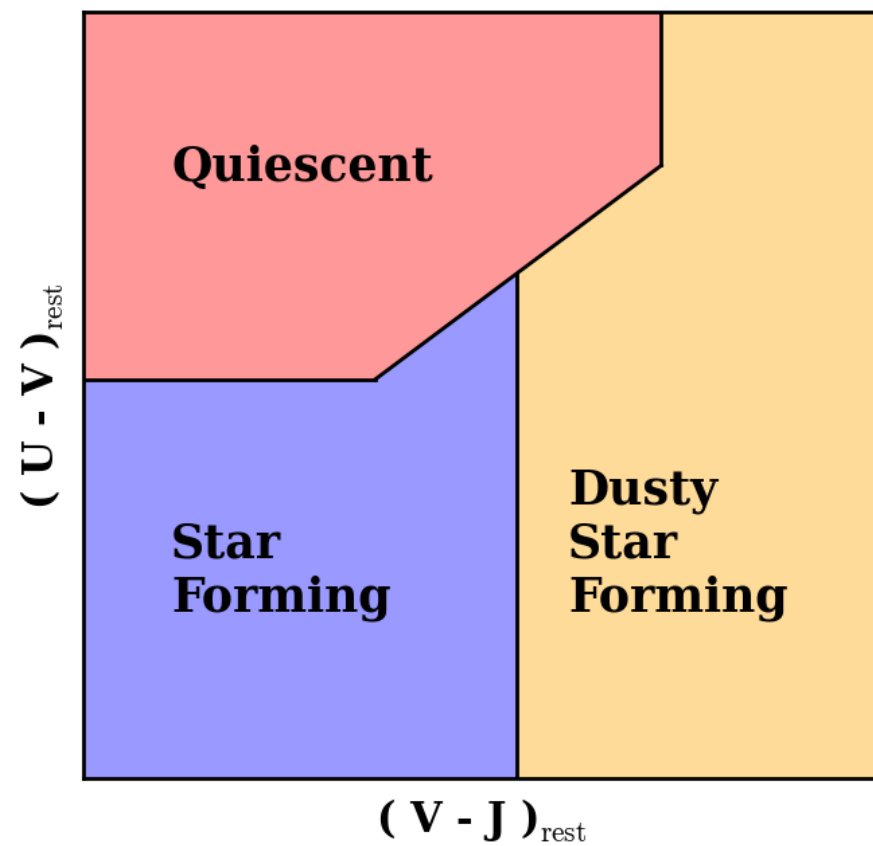
Properties of Strong ELGs at $3 < z < 4$?

MOSEL @ $3 < z < 4$



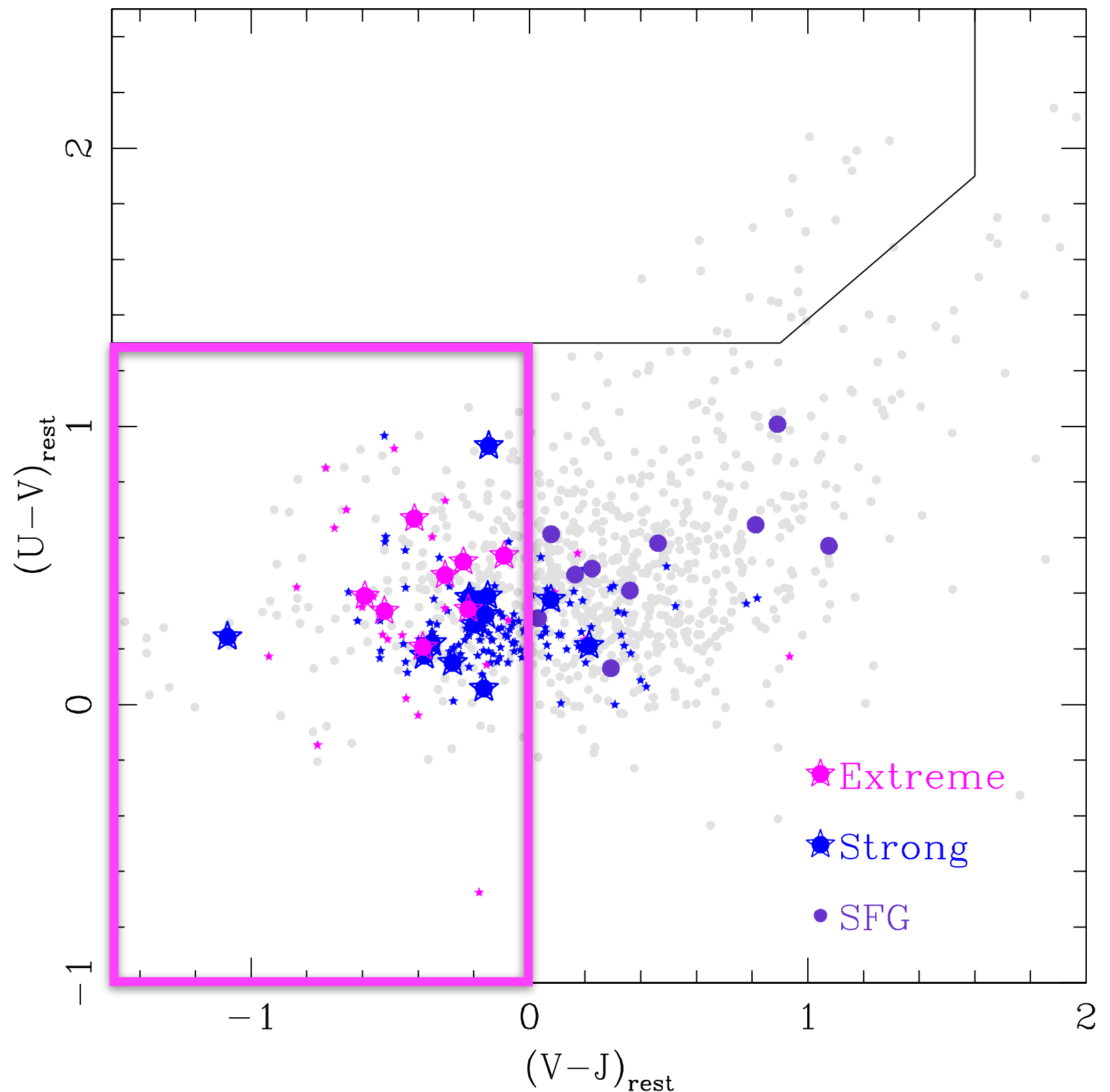
Tran+ in prep

MOSEL @ $3 < z < 4$

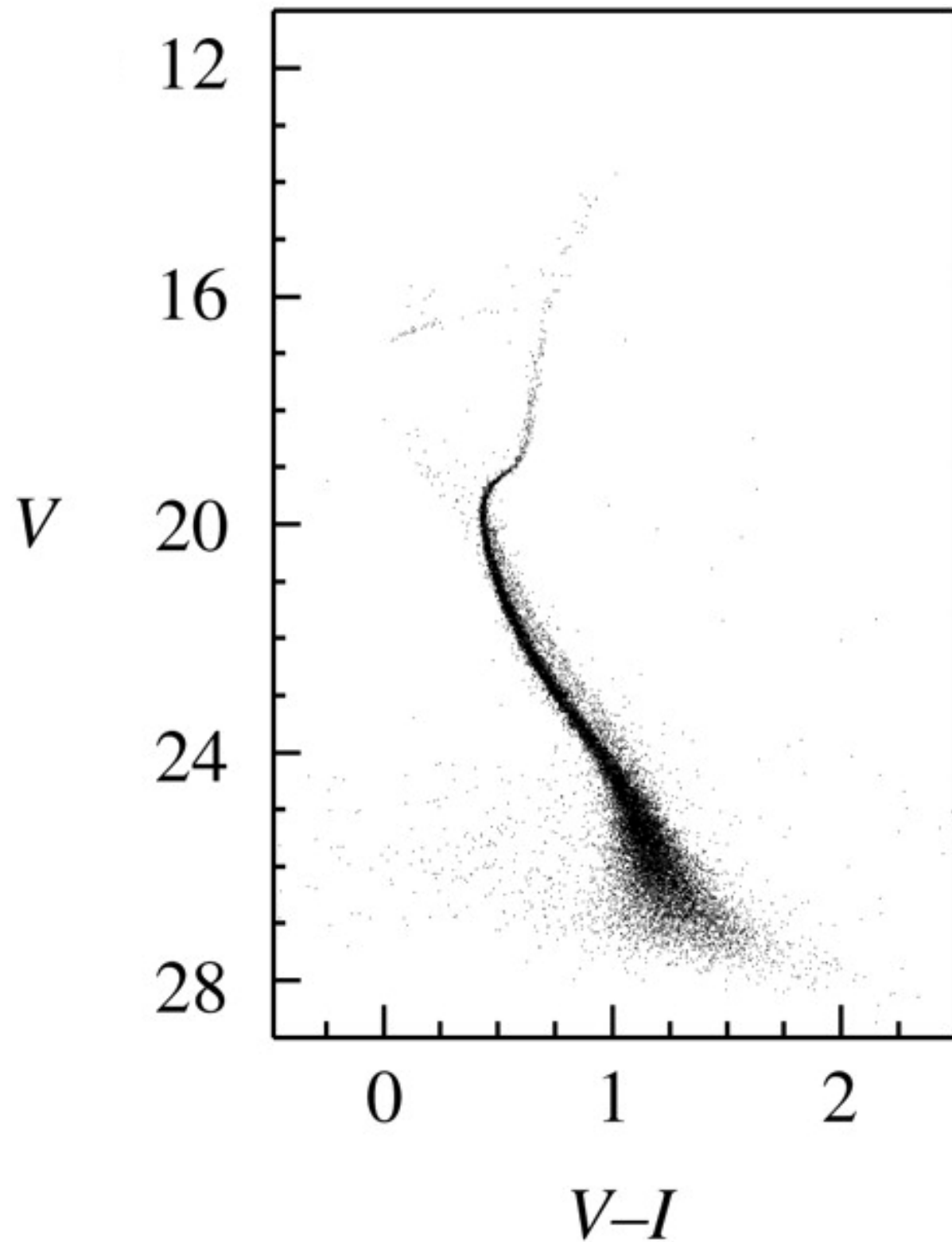


Extreme $\text{EW} > 800 \text{ \AA}$
Strong $\text{EW} > 200 \text{ \AA}$

Tran+ in prep

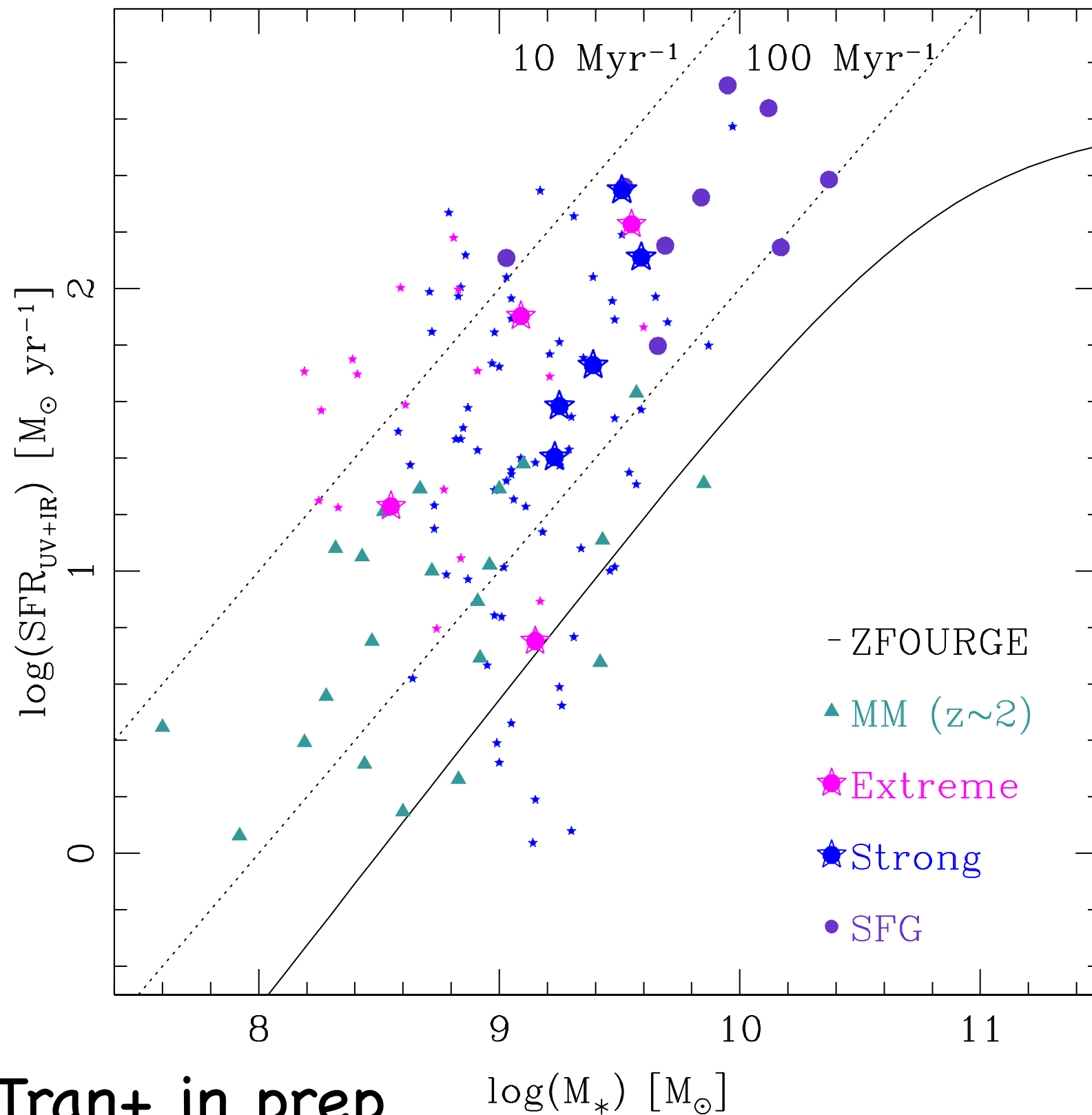


MOSEL @ $3 < z < 4$: SFMS



**Star Forming
Main Sequence**

MOSEL @ $3 < z < 4$: SFMS



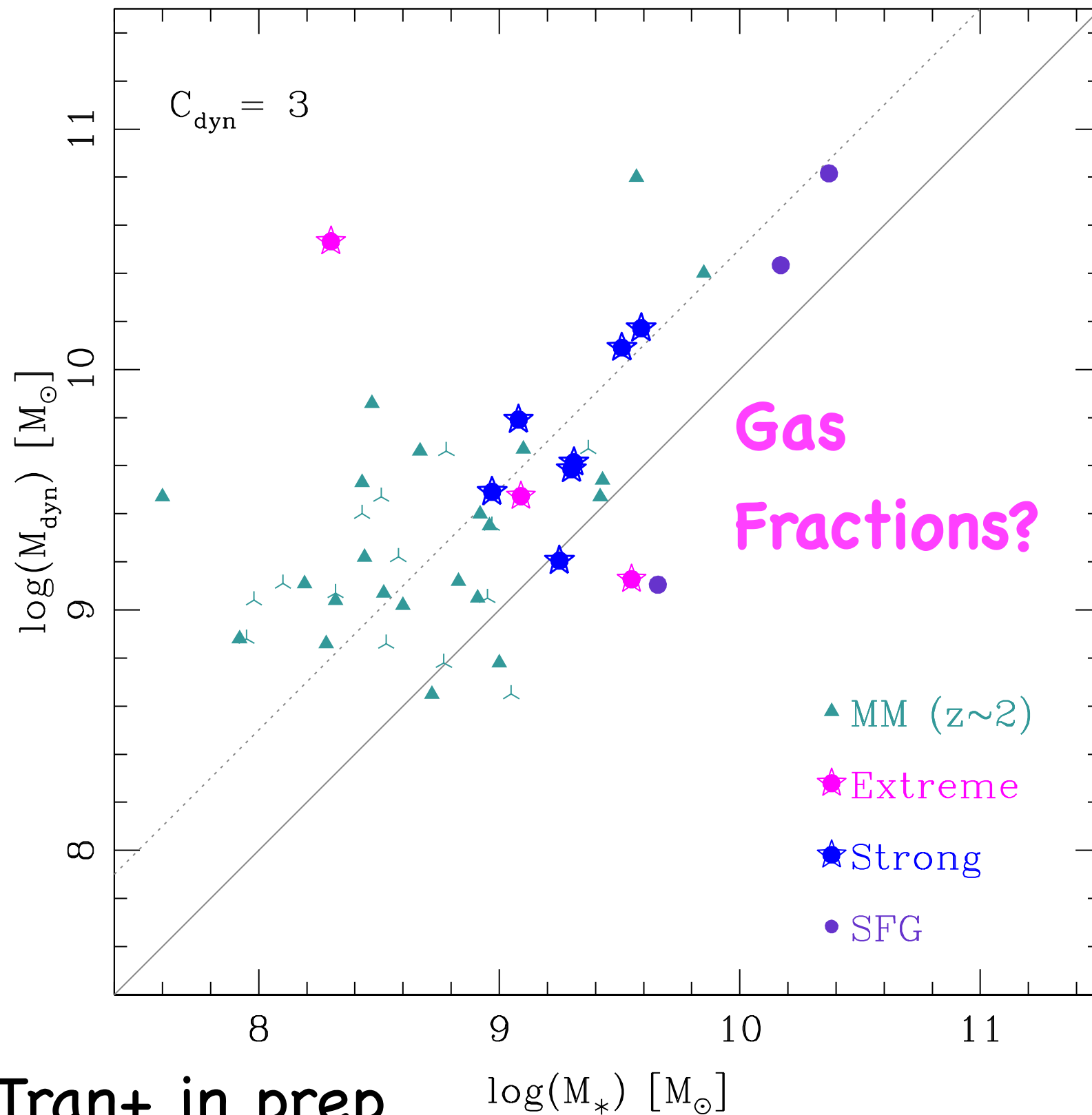
**Star Forming
Main Sequence**

UV-24 micron SFRs
Tomczak+16

Extreme $\text{EW} > 800 \text{ \AA}$
Strong $\text{EW} > 200 \text{ \AA}$

$z \sim 1-2$ Strong ELGs
Maseda+14

MOSEL @ $3 < z < 4$



Dynamical Masses

UV-24 micron SFRs

Tomczak+16

Galaxy Sizes

van der Wel+12, 14

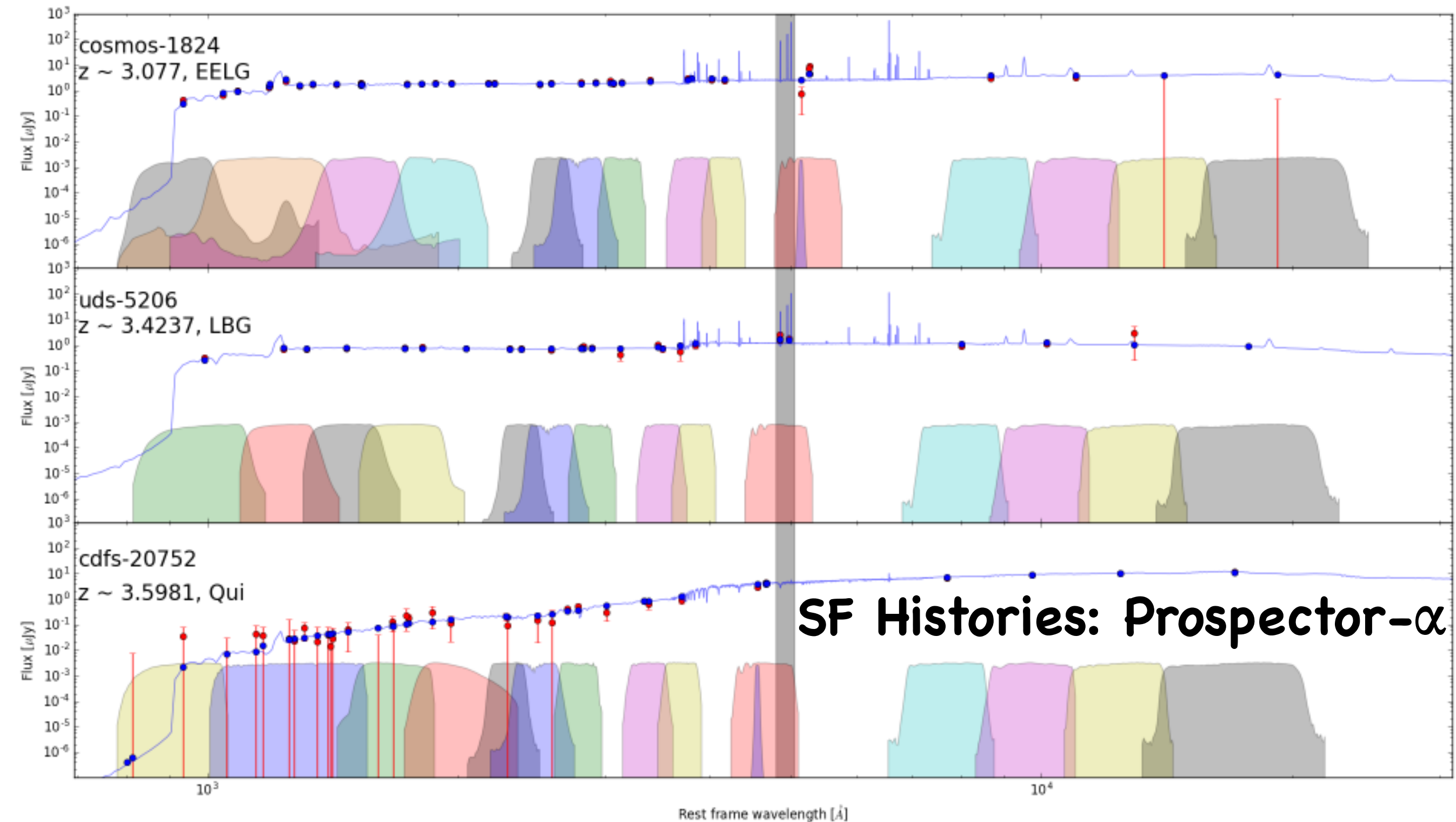
Extreme $\text{EW} > 800 \text{ \AA}$

Strong $\text{EW} > 200 \text{ \AA}$

$z \sim 1-2$ Strong ELGs

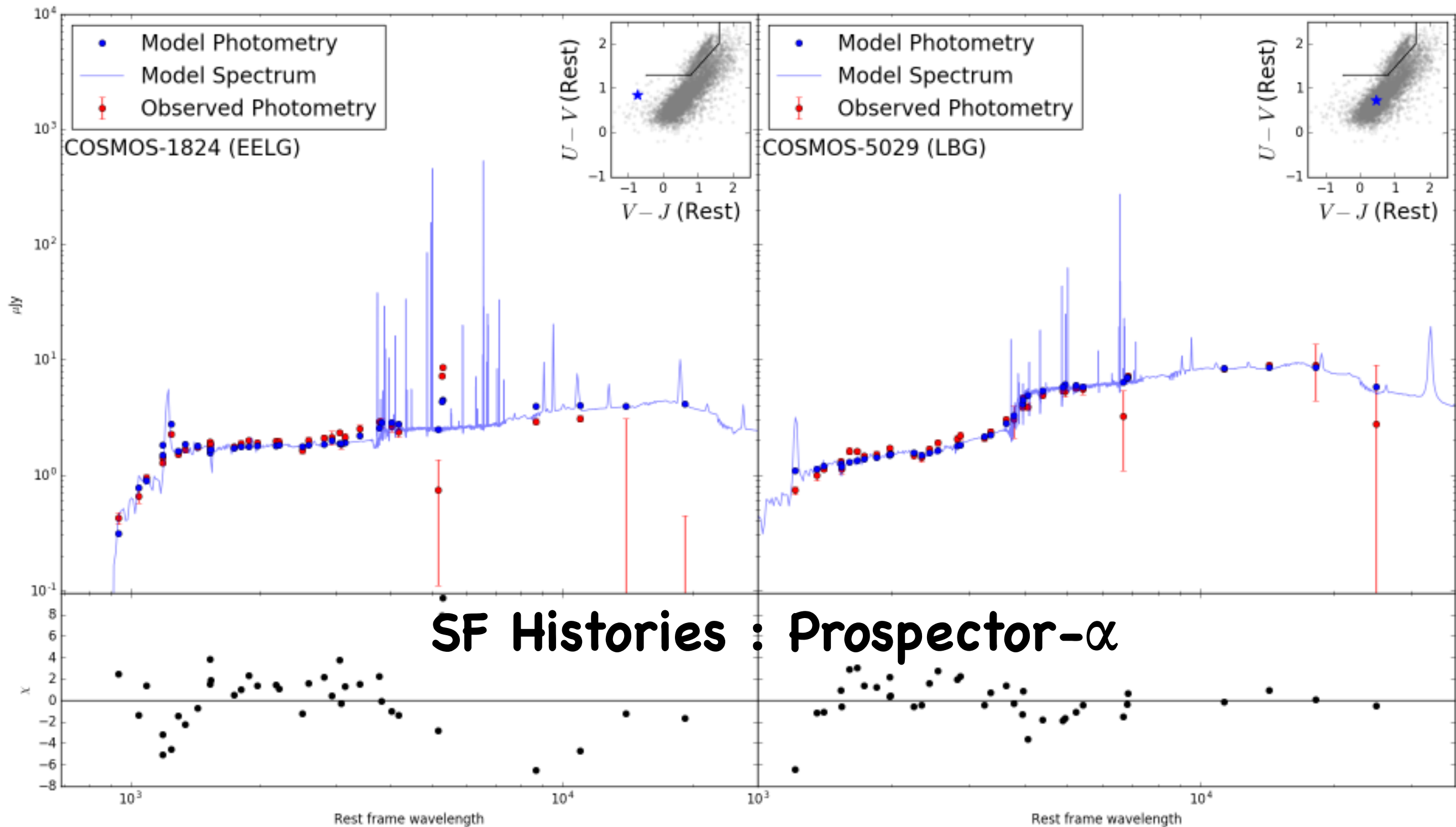
Maseda+14

MOSEL @ $3 < z < 4$



Cohn, Leja, Tran, Forrest+ in prep

MOSEL @ $3 < z < 4$

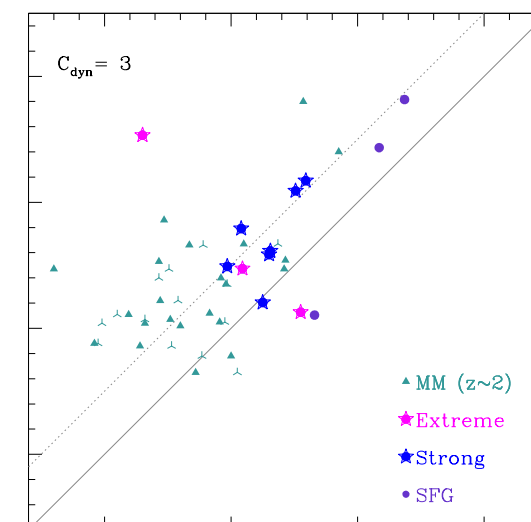
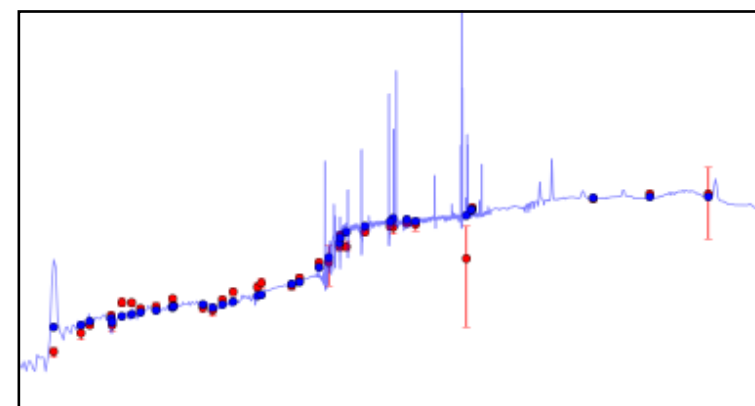
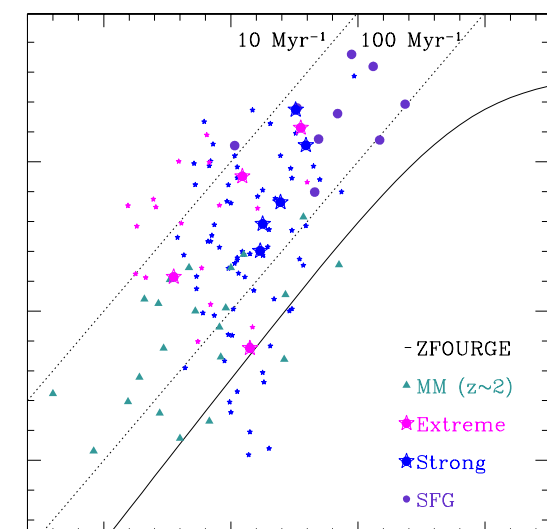
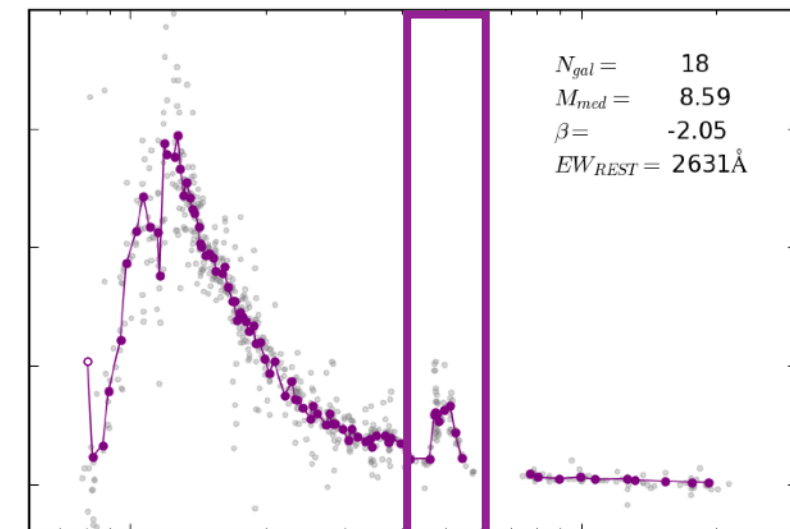


Cohn, Leja, Tran, Forrest+ in prep

MOSEL @ $3 < z < 4$

Spectroscopy of
star-forming galaxies with
highest $H\beta + [OIII]$ equivalent widths

- Galaxy scaling relations
- Emission-line kinematics
- Emission-line ratios : $H\beta$, $[OIII]$
- Star Formation Histories
- Lyman-Continuum Escape Fraction
<5% @ $z \sim 3.5$ (Naidu, Forrest+ submitted)



MOSEL Survey



MITCHELL INSTITUTE
TEXAS A&M UNIVERSITY



UNSW
SYDNEY



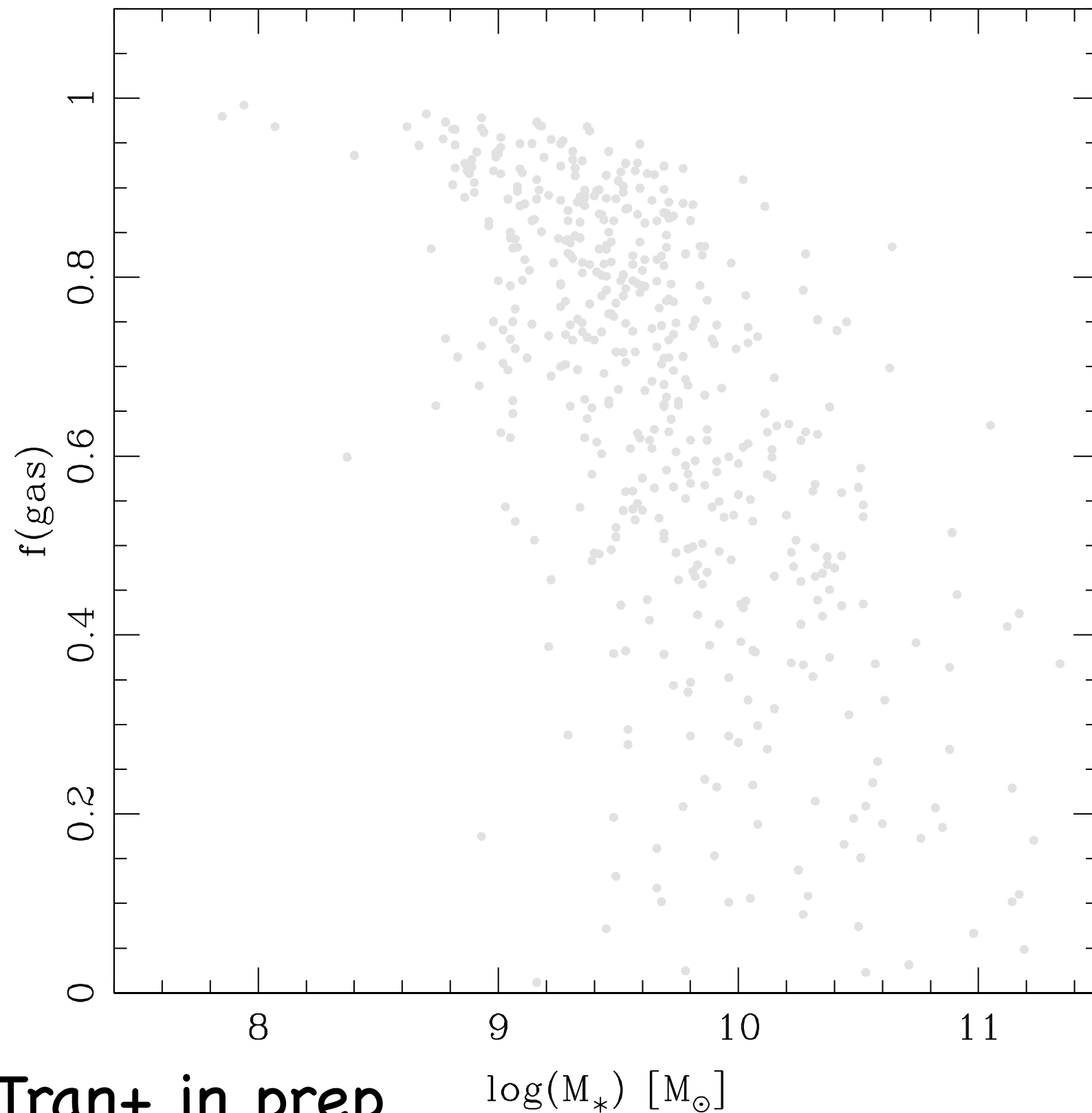
**Australian
National
University**



**MACQUARIE
UNIVERSITY**
SYDNEY ~ AUSTRALIA



MOSEL @ $3 < z < 4$



**Inferred
Gas Fractions**

UV-24 micron SFRs

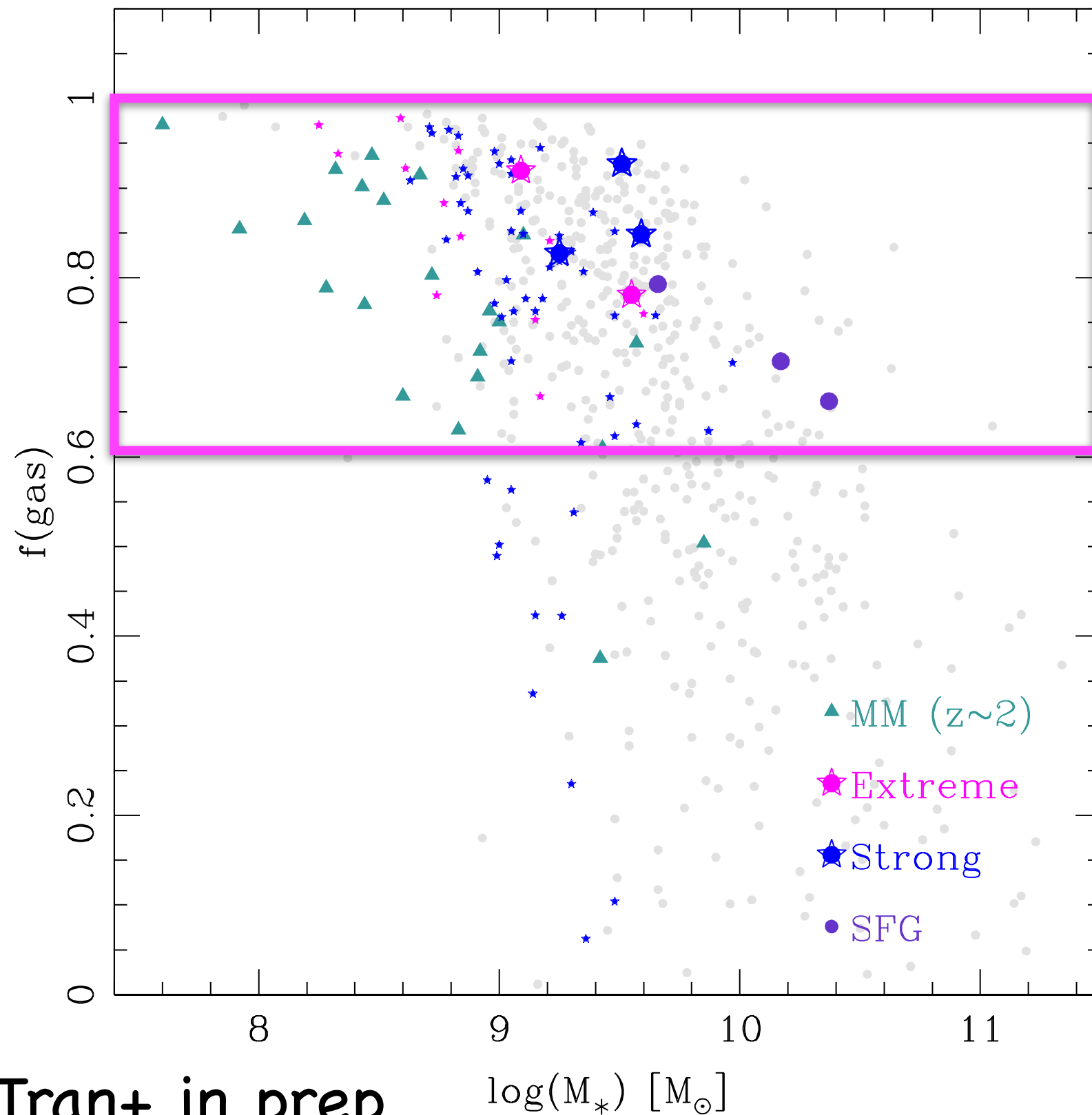
Tomczak+16

Galaxy Sizes

van der Wel+12, 14

Tran+ in prep

MOSEL @ $3 < z < 4$



**Inferred
Gas Fractions**

UV-24 micron SFRs
Tomczak+16

Galaxy Sizes
van der Wel+12, 14

Extreme $\text{EW} > 800 \text{ \AA}$
Strong $\text{EW} > 200 \text{ \AA}$

$z \sim 1-2$ Strong ELGs
Maseda+14