

MUSE
multi unit spectroscopic explorer



ETH



Physical Properties of lensed LAEs

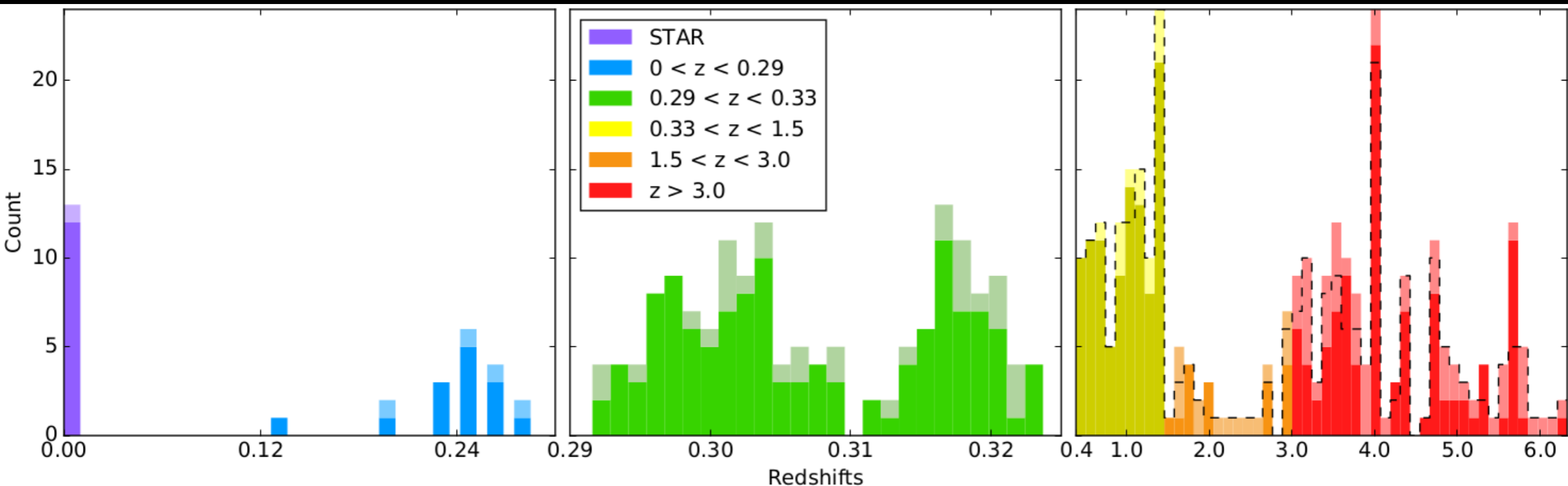
Martinez et al.



Aim of the study

- Use gravitational lensing to detect Galaxies with $z > 3$
- Deduce from SED and MUSE redshift, physical properties (M^* , SFR, Reddening, R_e , β_{slope}) [Hyperz]
- Use the sample to better constrain scaling relation for $z > 3$ galaxies

A2744 Redshift Distribution

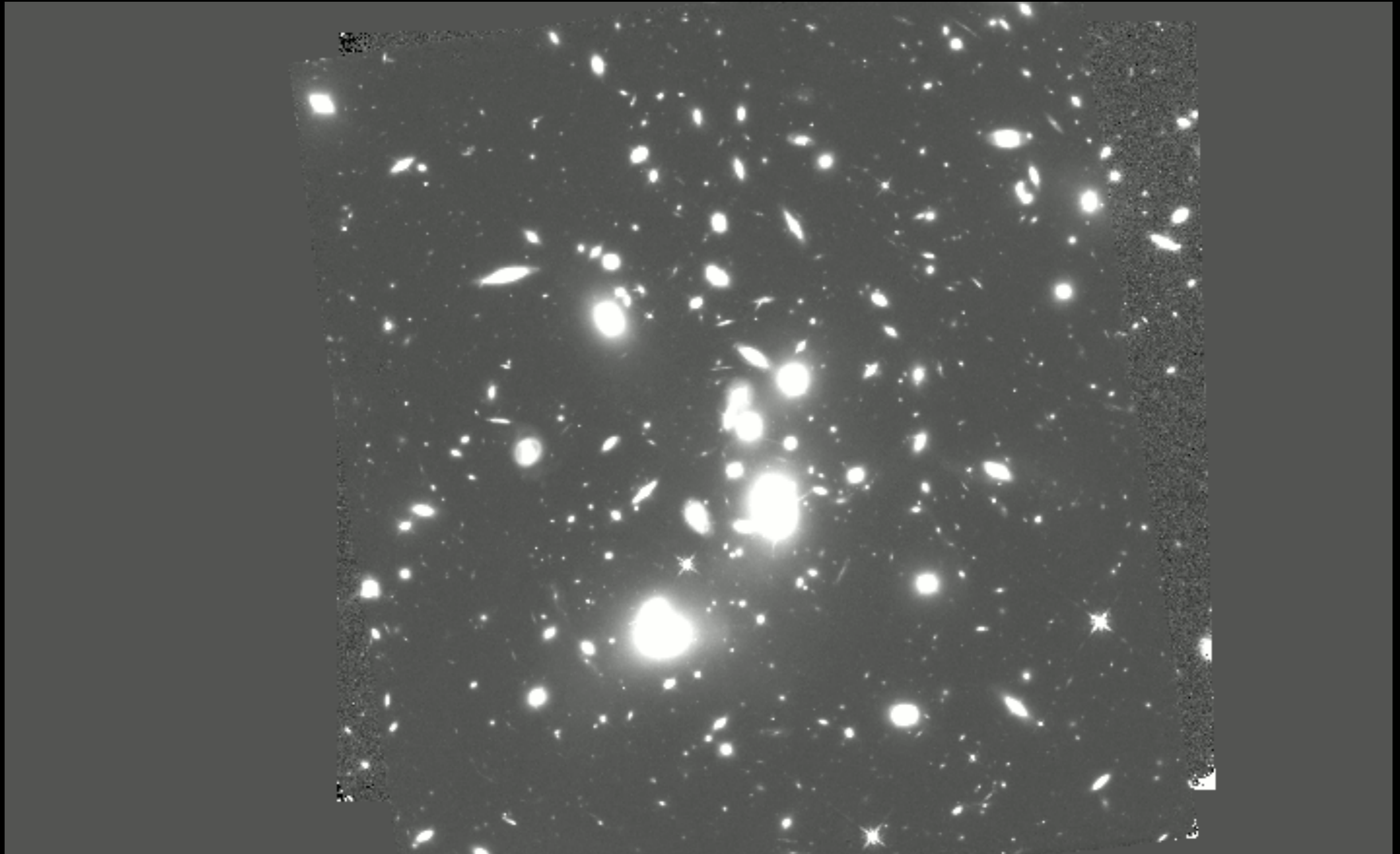


Mahler et al. 2017

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Decontamination & photometry

HST (ACS + WFC3IR)

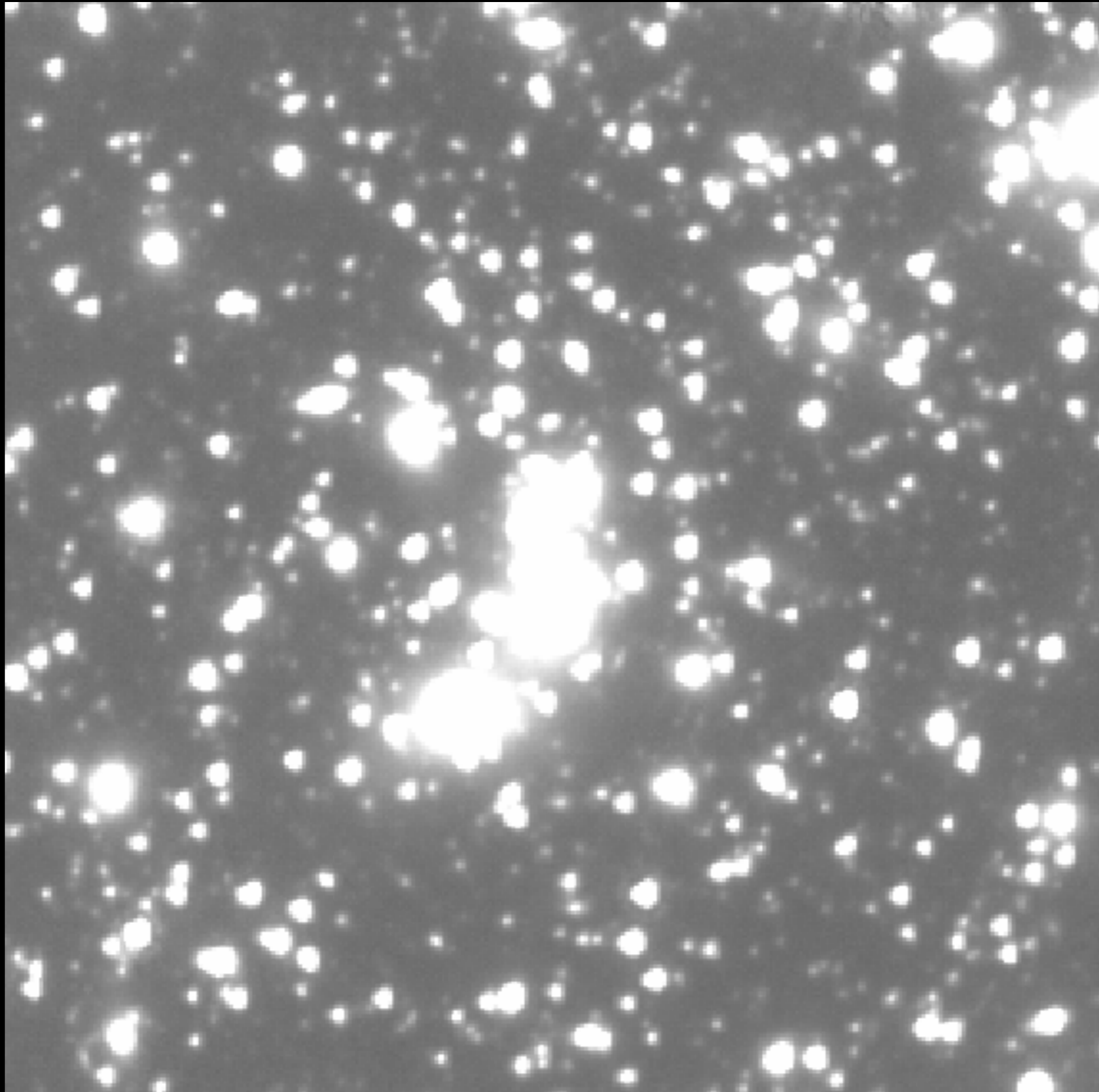


4 Decontamination & photometry Kband



5 Decontamination & photometry

IRAC (ch1&2)



542

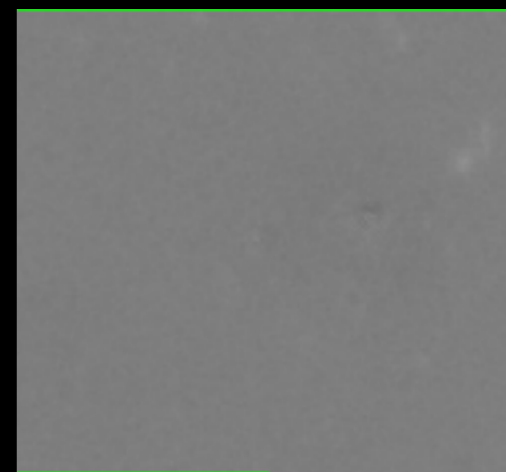
Image

Deblended

Model

Residual

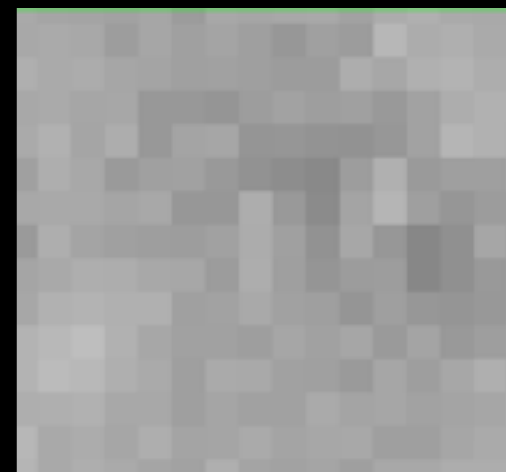
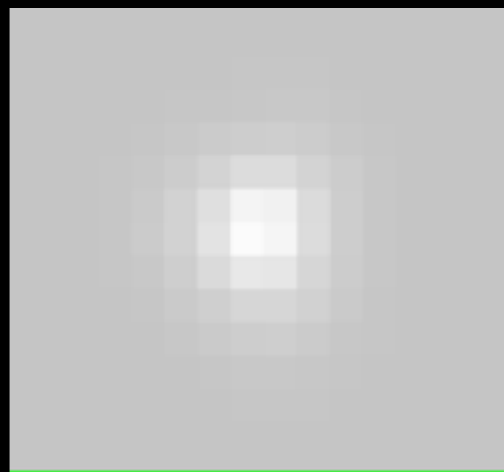
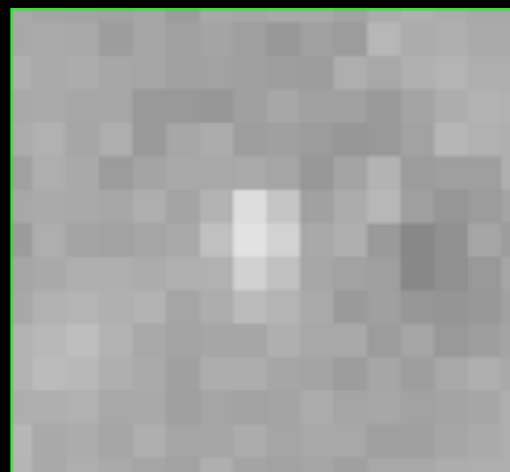
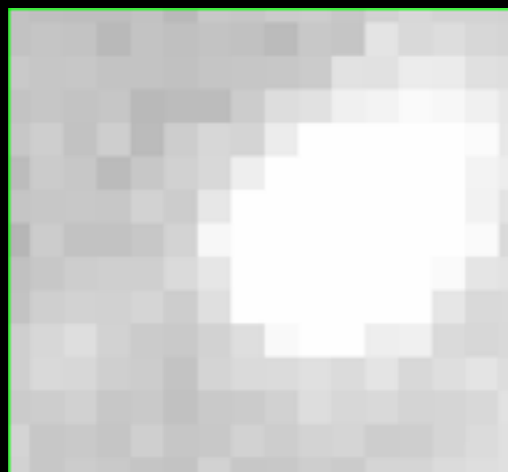
H160



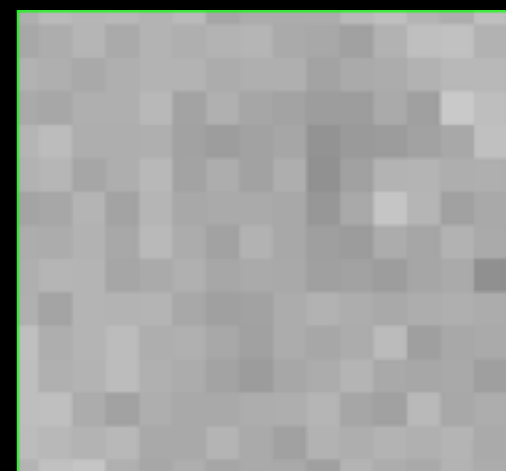
K-Band



IRAC ch1



IRAC ch2



922

Image

Deblended

Model

Residual

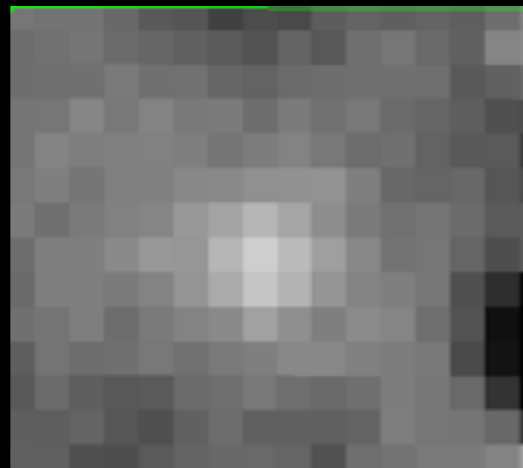
H160



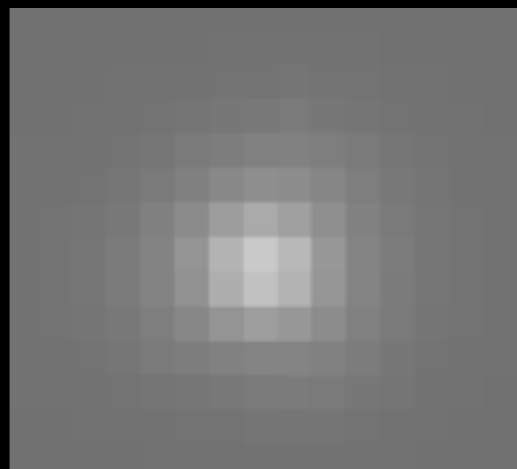
K-Band



IRAC ch1

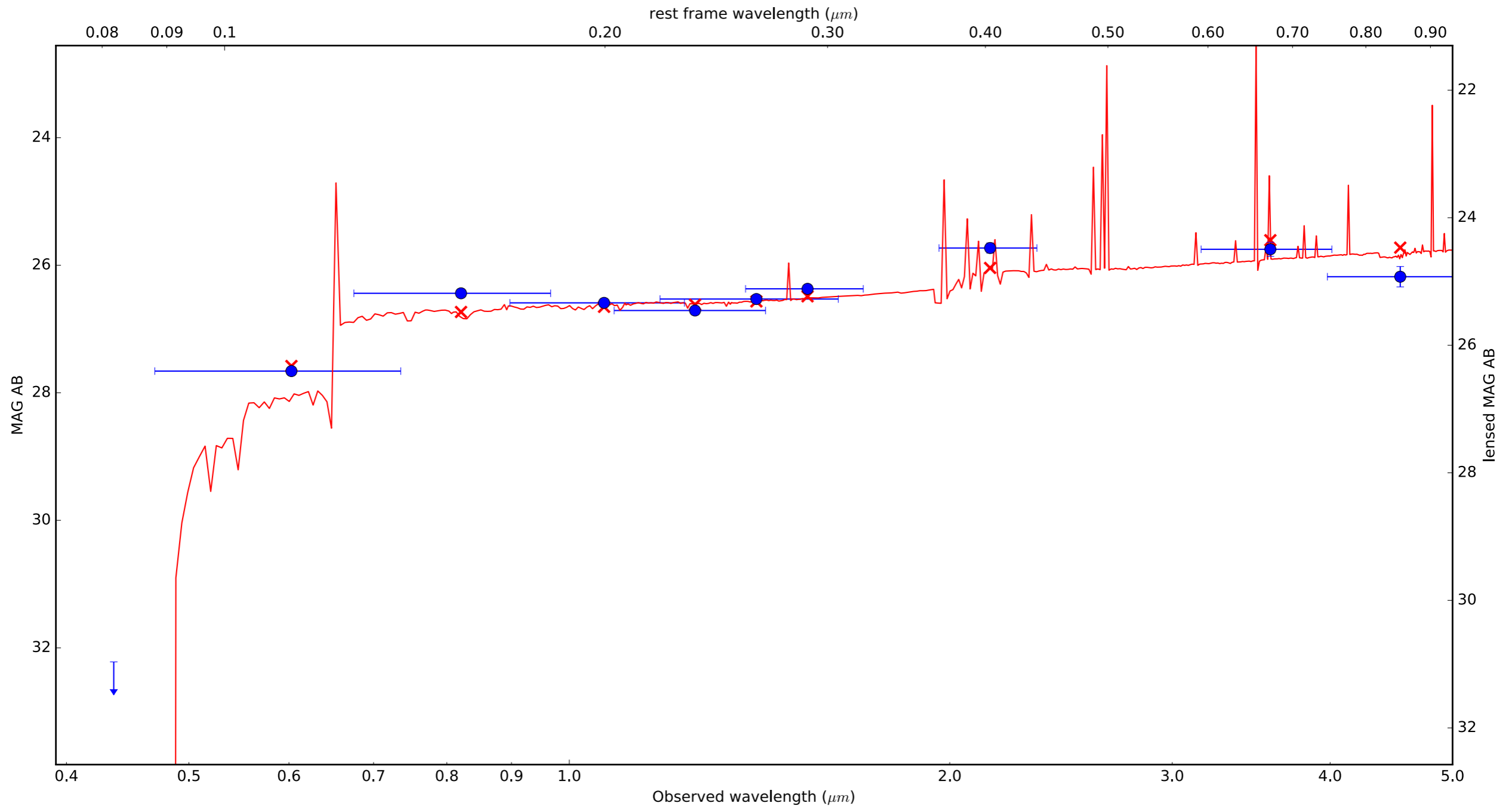


IRAC ch2



SED

Object 542

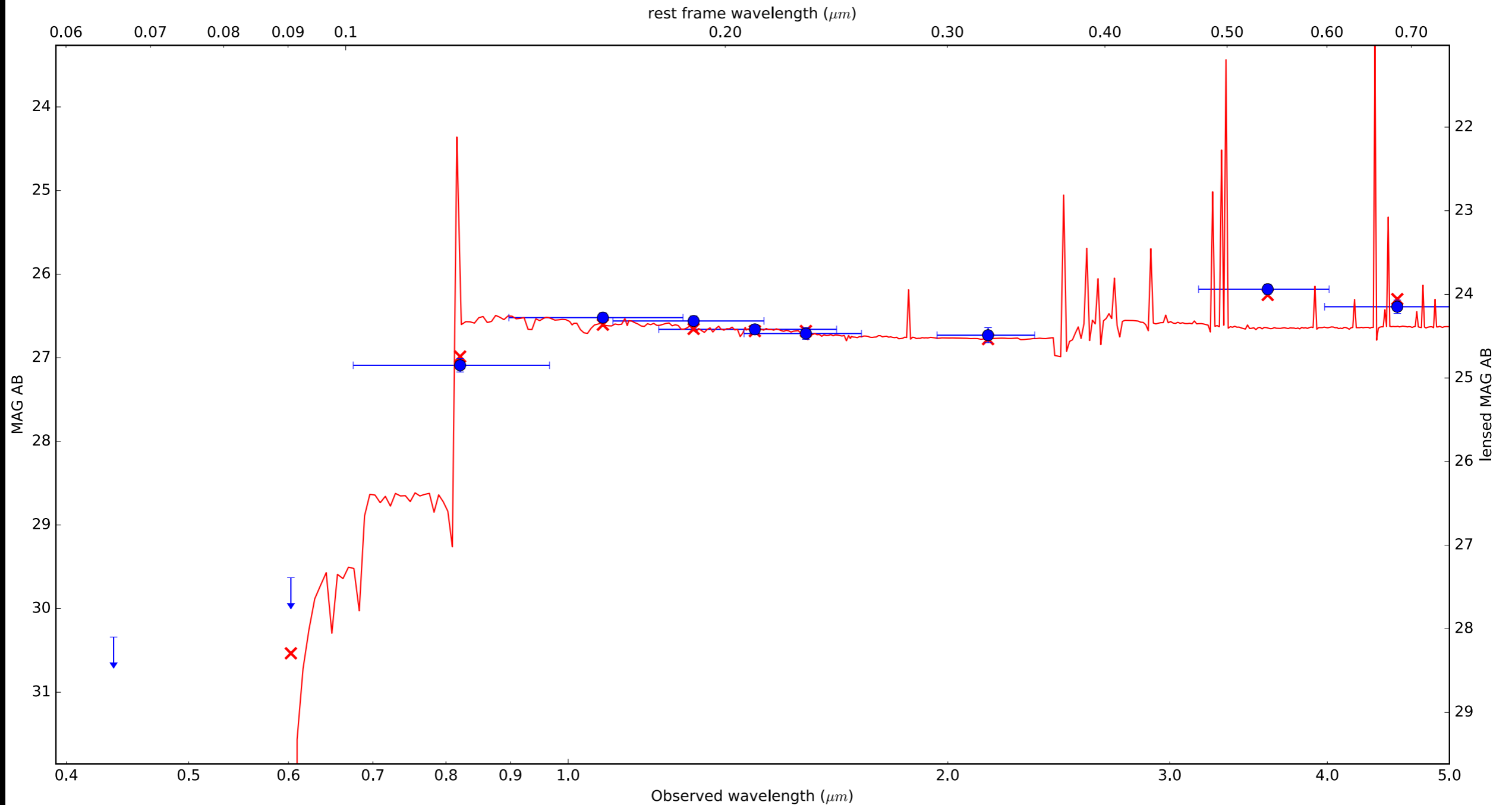


- $M : 1.3^{+0.9}_{-1.0} \times 10^9 M_{\odot}$
- $SFR : 6^{+0.2}_{-0.9} M_{\odot}/\text{yr}$
- $\text{Age} : 180^{+320}_{-160} \text{ Myr}$

- MUSE redshift : 4.3361
- $a_v : 0.3^{+0.3}_{-0.2} \text{ mag}$
- $Re : 0.58^{+0.07}_{-0.07} \text{ kpc}$

SED

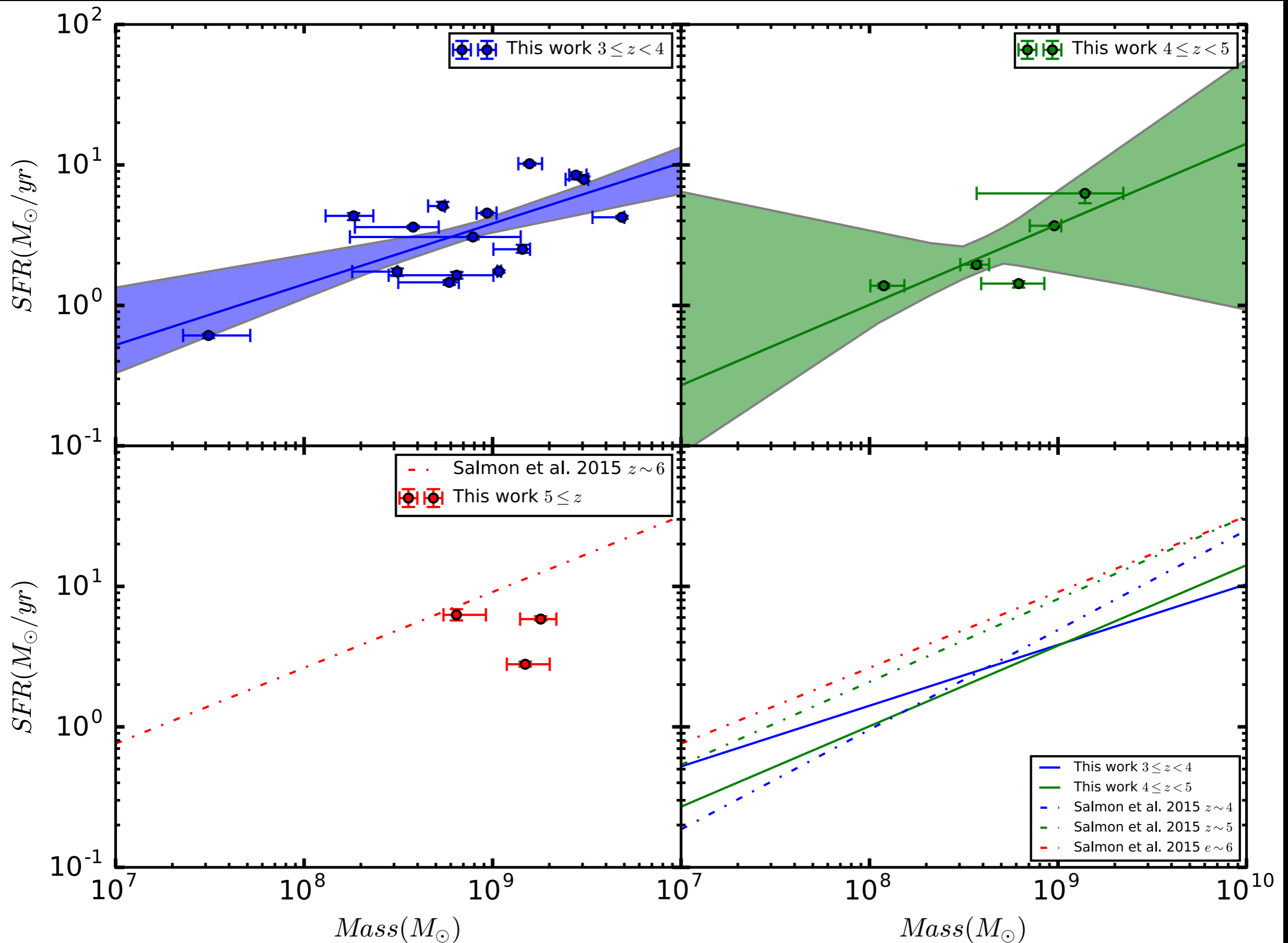
Object 922



- $M : 6^{+3}_{-1} \times 10^8 M_{\odot}$
- $\text{SFR} : 6^{+0.6}_{-0.5} M_{\odot}/\text{yr}$
- $\text{Age} : 90^{+90}_{-0} \text{ Myr}$

- MUSE redshift : 5.6618
- $a_v : 0.2^{+0}_{-0.1} \text{ mag}$
- $\text{Re} : 1.75^{+0.18}_{-0.18} \text{ kpc}$

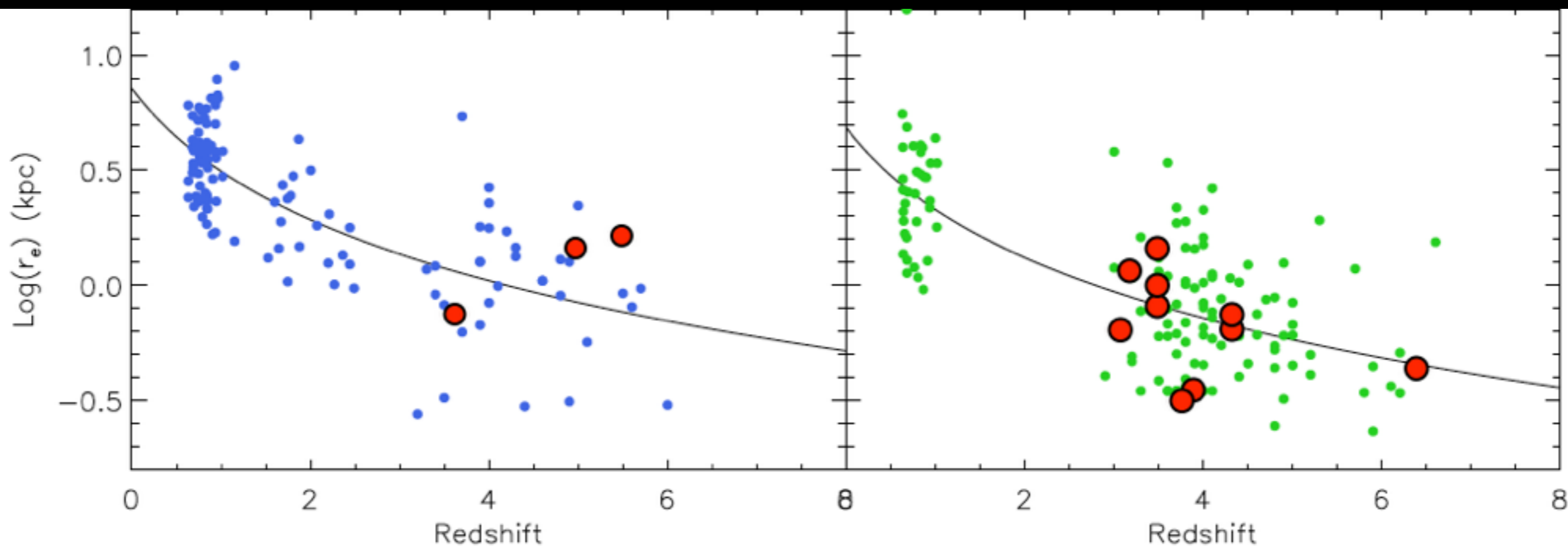
Mass - SFR relation



Size - redshift relation

$\log(M_*/M_\odot) \sim 9.5-10.4$

$\log(M_*/M_\odot) \sim 8.6-9.5$



Mosleh et al. 2012

● Sample of 13 galaxies

Next Steps

- Apply to other MUSE GTO clusters (MACS0416,MACS1206)
- Reach a sample size of ~ 60 objects ($z > 3$)
- Compare line flux data with MUSE spectroscopy (Ly α Flux)
- Scaling relations :
 - M_{\odot}
 - SFR
 - β slope
 - R_e
 - Z_{\odot}
 - ...