

# Studying Lyman alpha halo of LARS+eLARS galaxies

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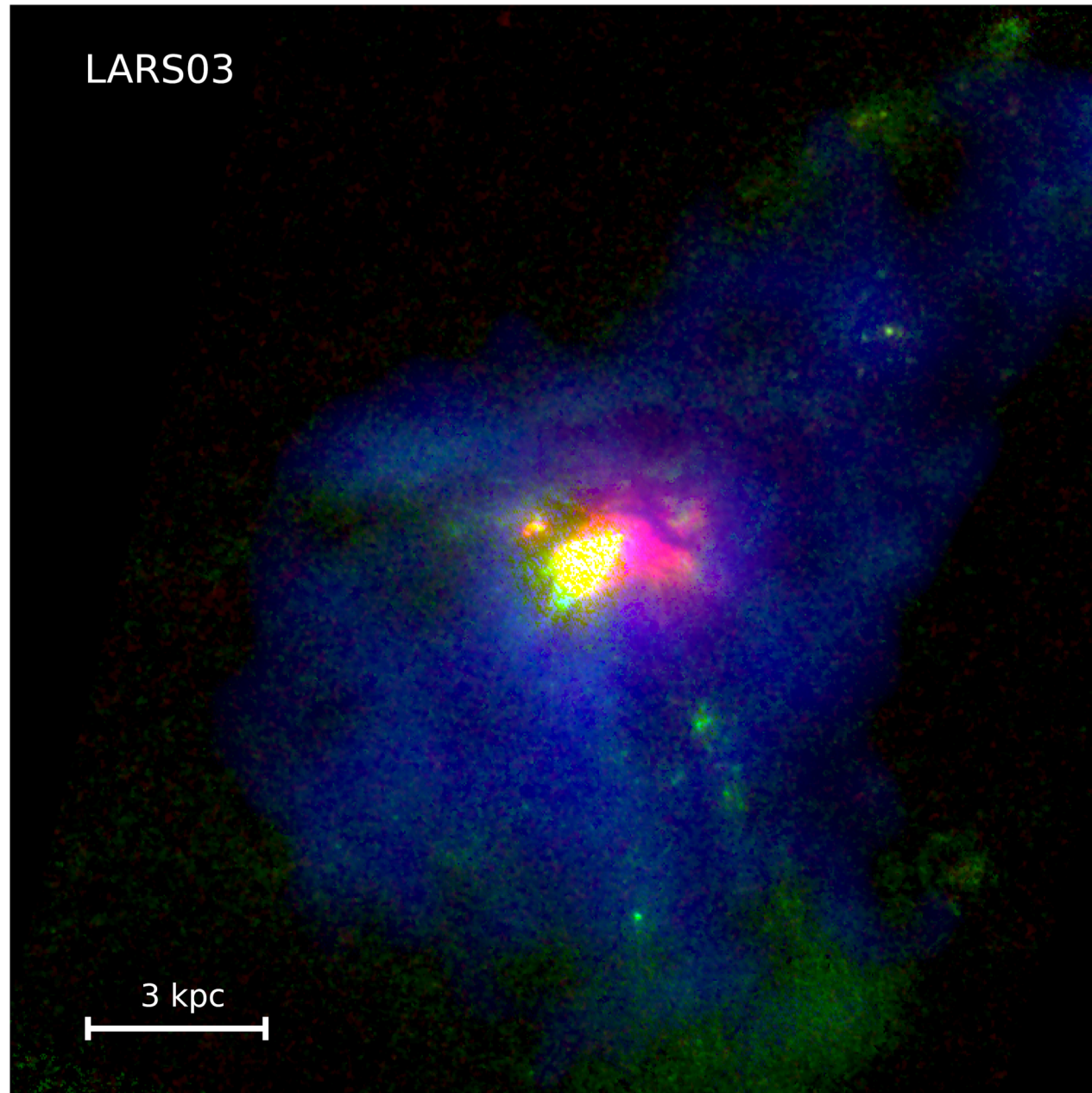
Stockholm  
University



# Motivation

- Ly $\alpha$  study of the halo of the nearby galaxies
  - Measuring the extension of the halos
  - Measuring the halo fraction
- Having better understanding of the evolution of the Ly $\alpha$  halo size of galaxies

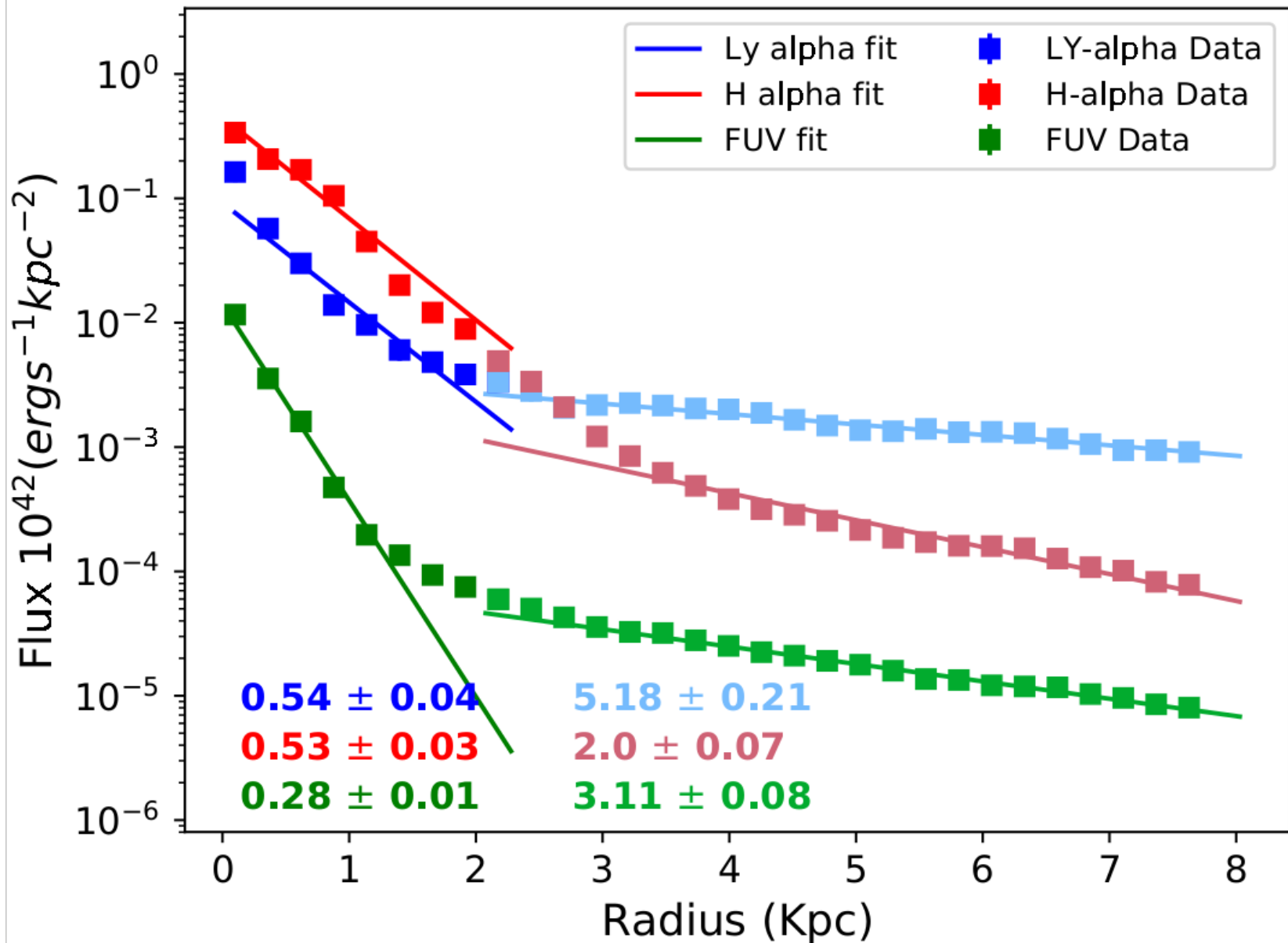
# An example of the LARS galaxies:



# Analysis

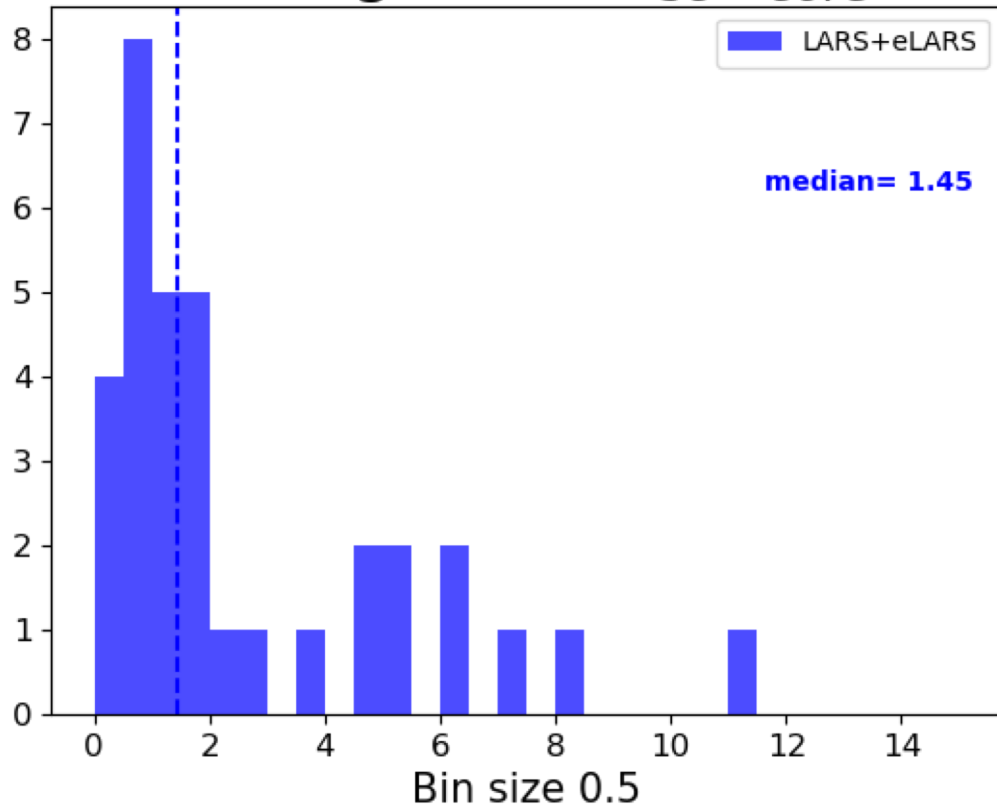
- Separating the cores from the halos
  - Critical (SFRD) =  $0.01 M_{\odot} / \text{yr} / \text{kpc}^2$
- Fitting function:
  - Exp:  $A \times \exp(-r/r_{sc})$

# Fitted profiles: LARS03

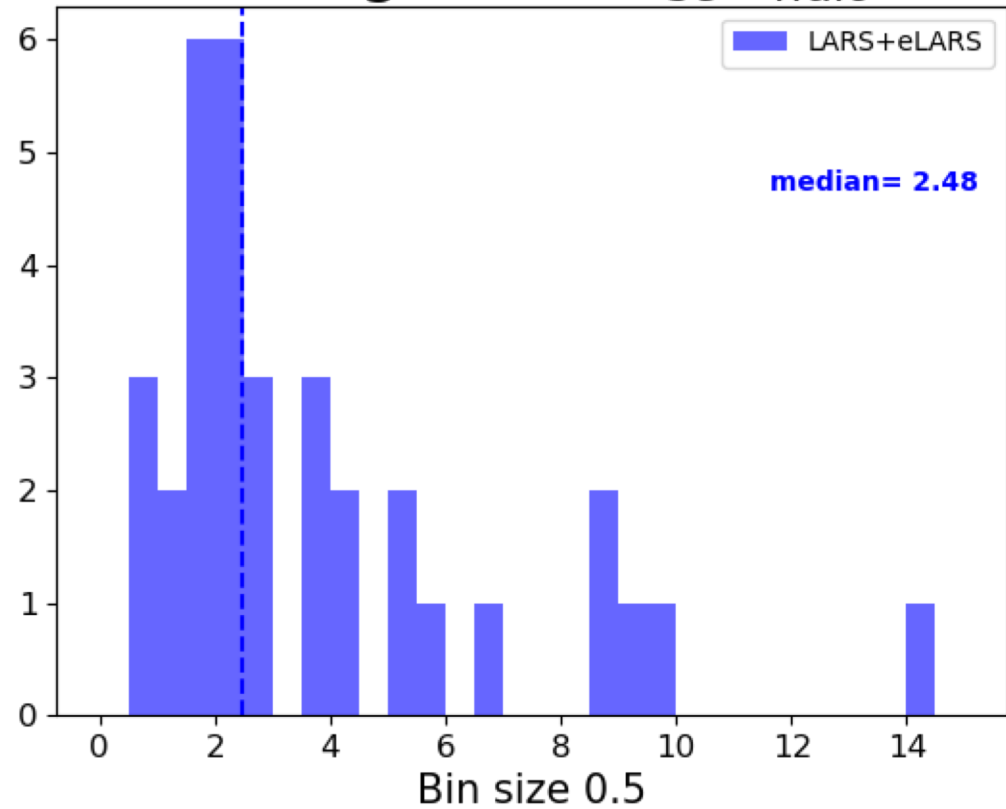


# Results

Histogram of  $r_{sc} - core$

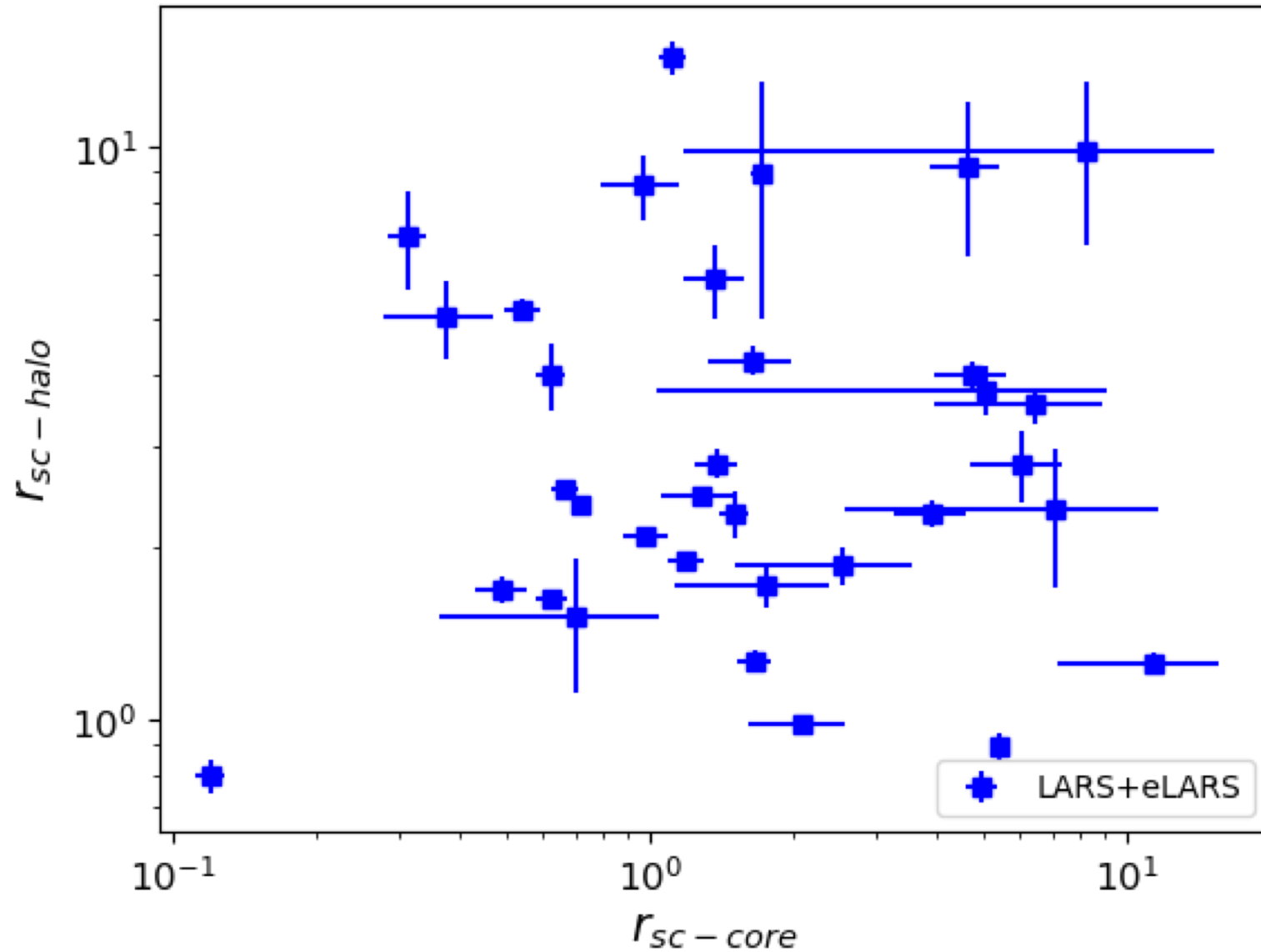


Histogram of  $r_{sc} - halo$



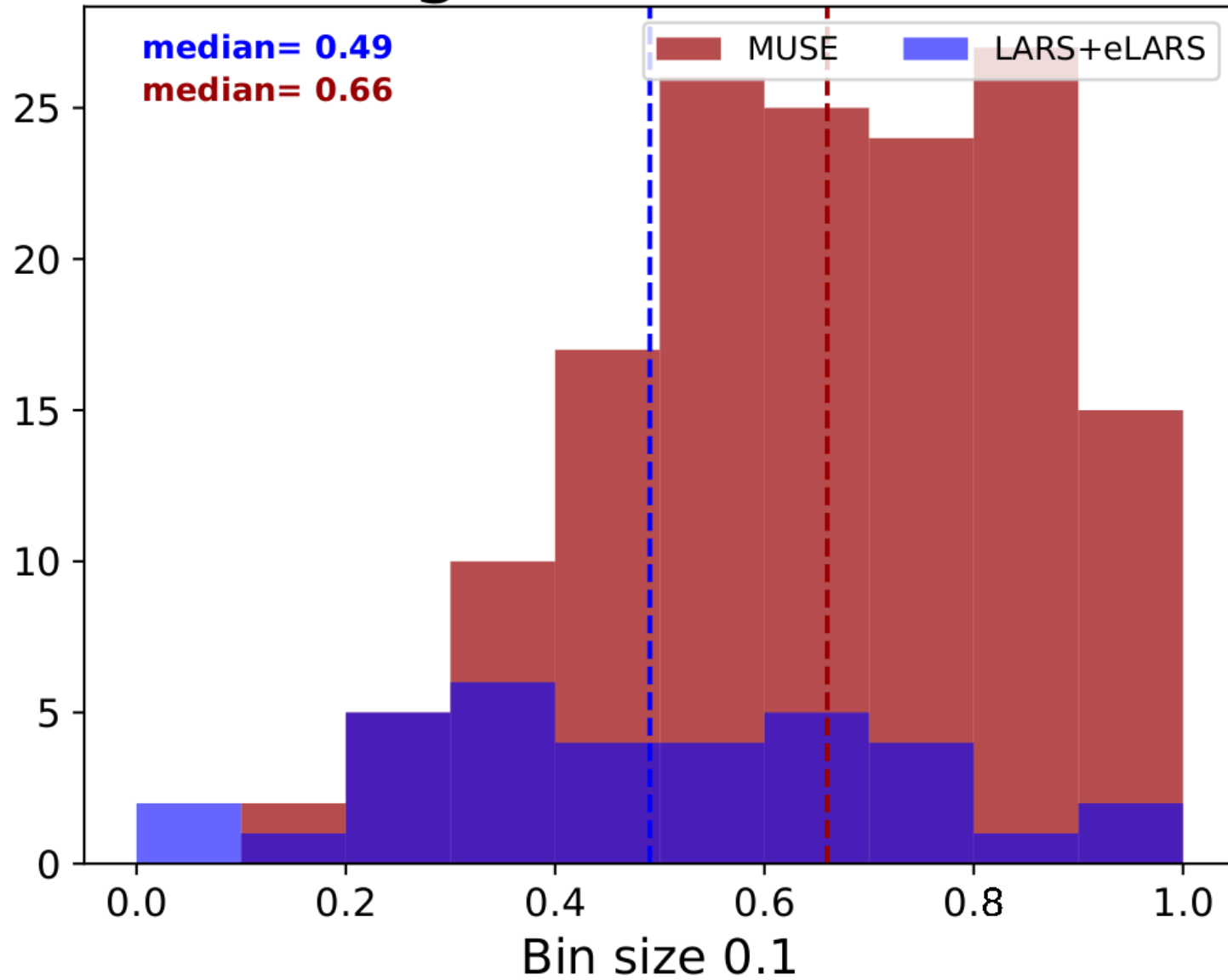
# Result

$r_{sc - halo}$  VS.  $r_{sc - core}$



# Result

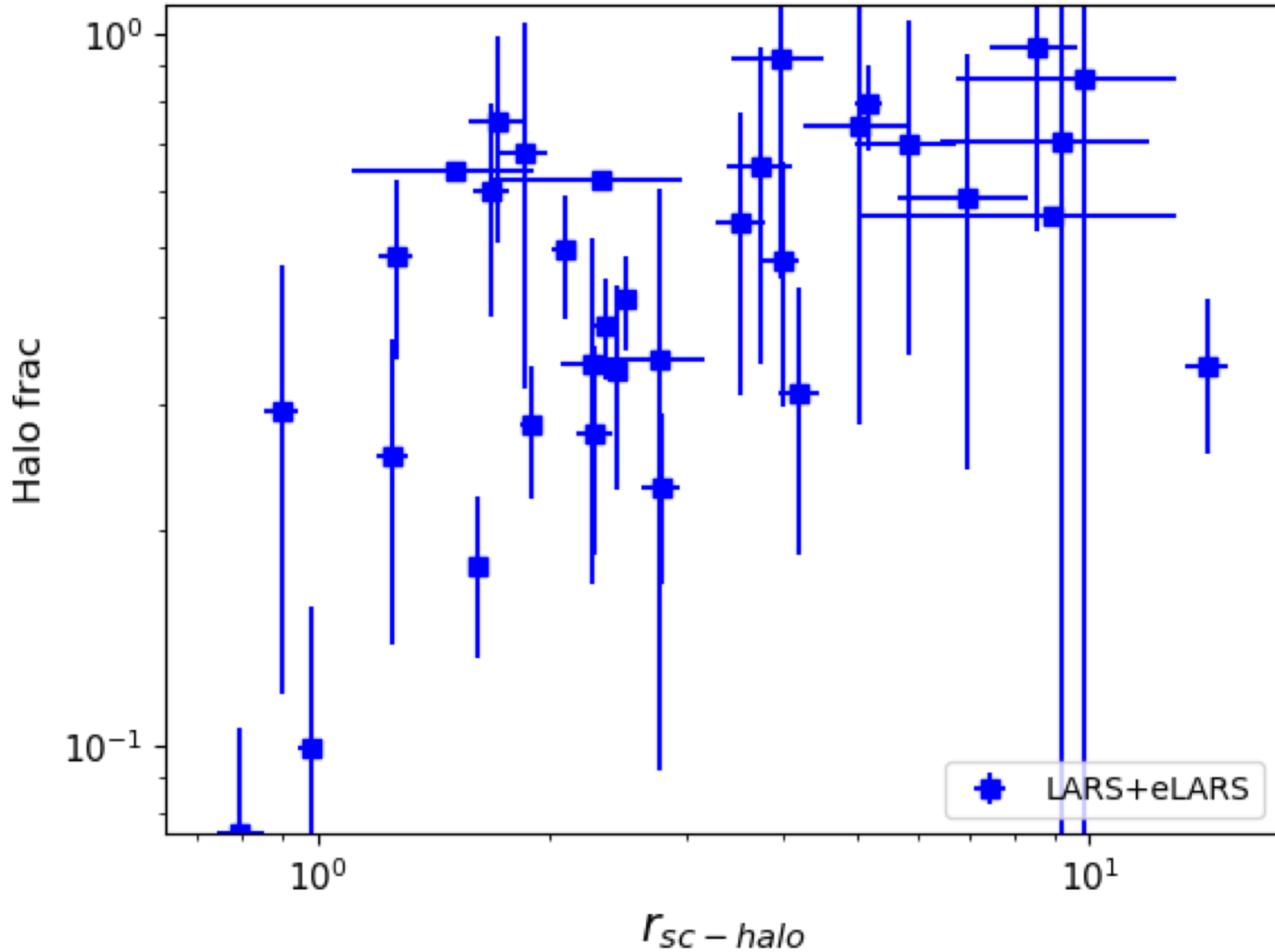
## Histogram of Halo frac





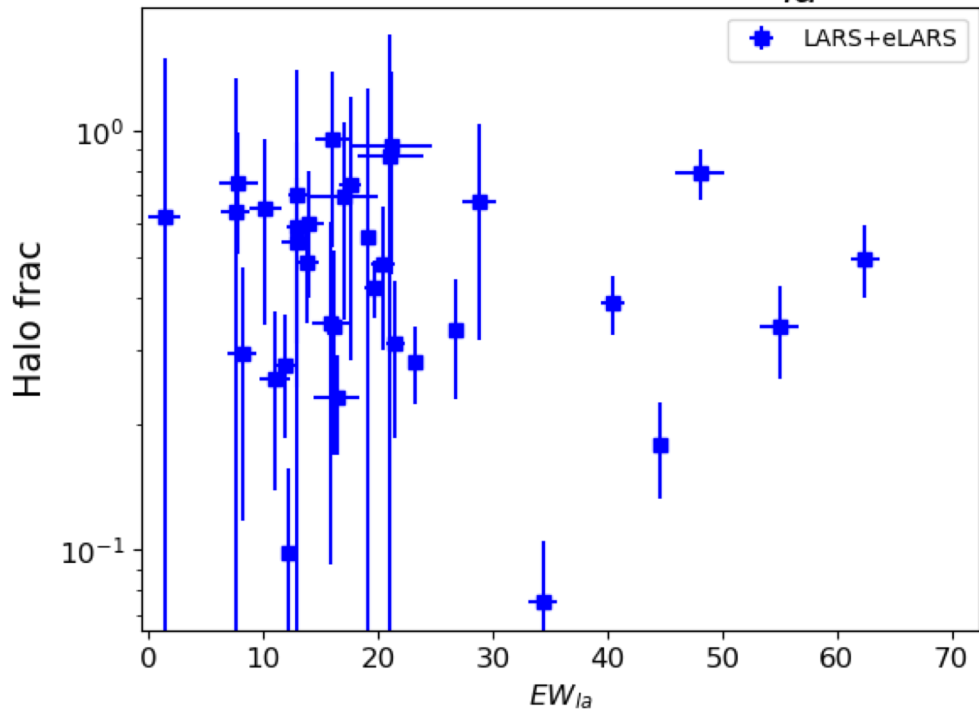
# Results

## Halo frac vs. $r_{sc} - halo$

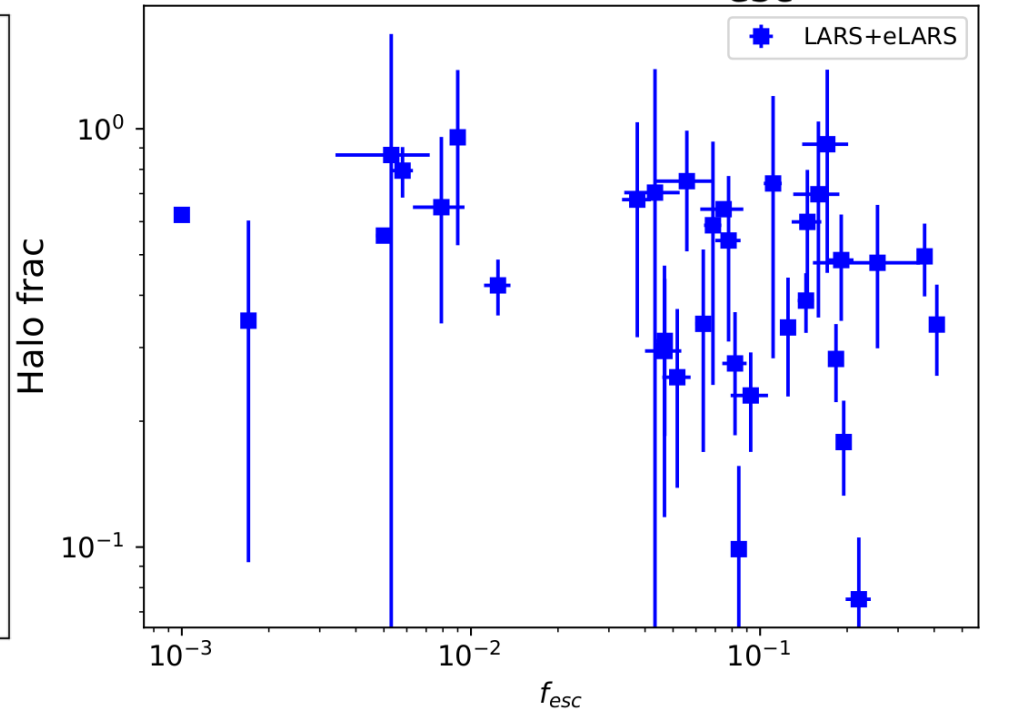


# Results

Halo frac vs.  $EW_{Ia}$

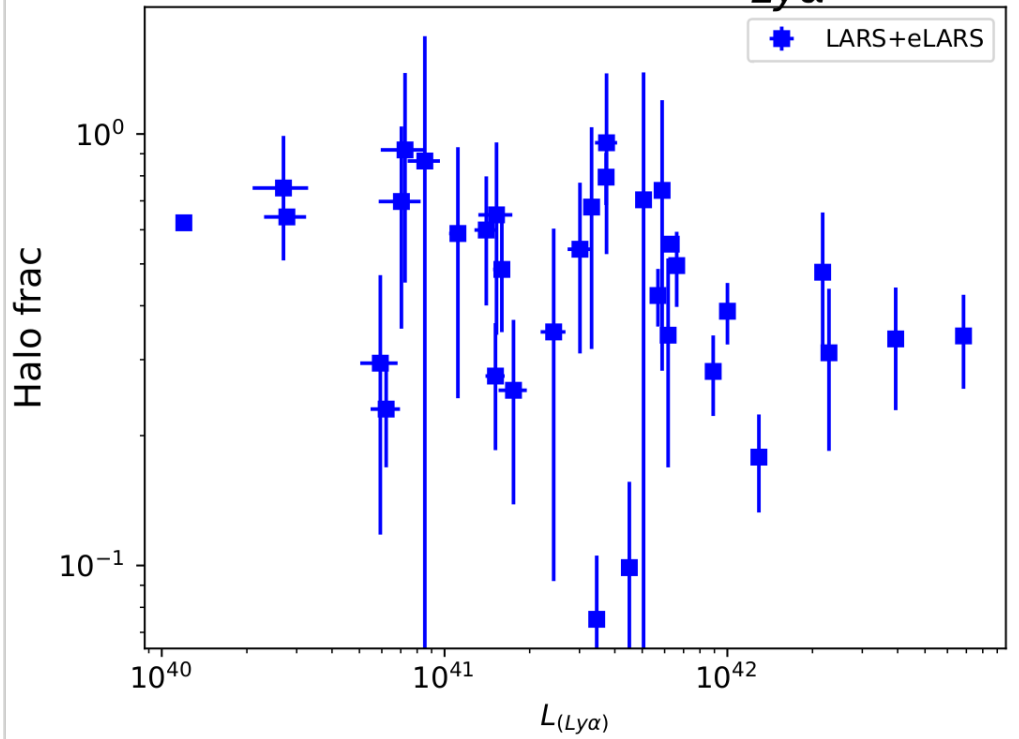


Halo frac vs.  $f_{esc}$

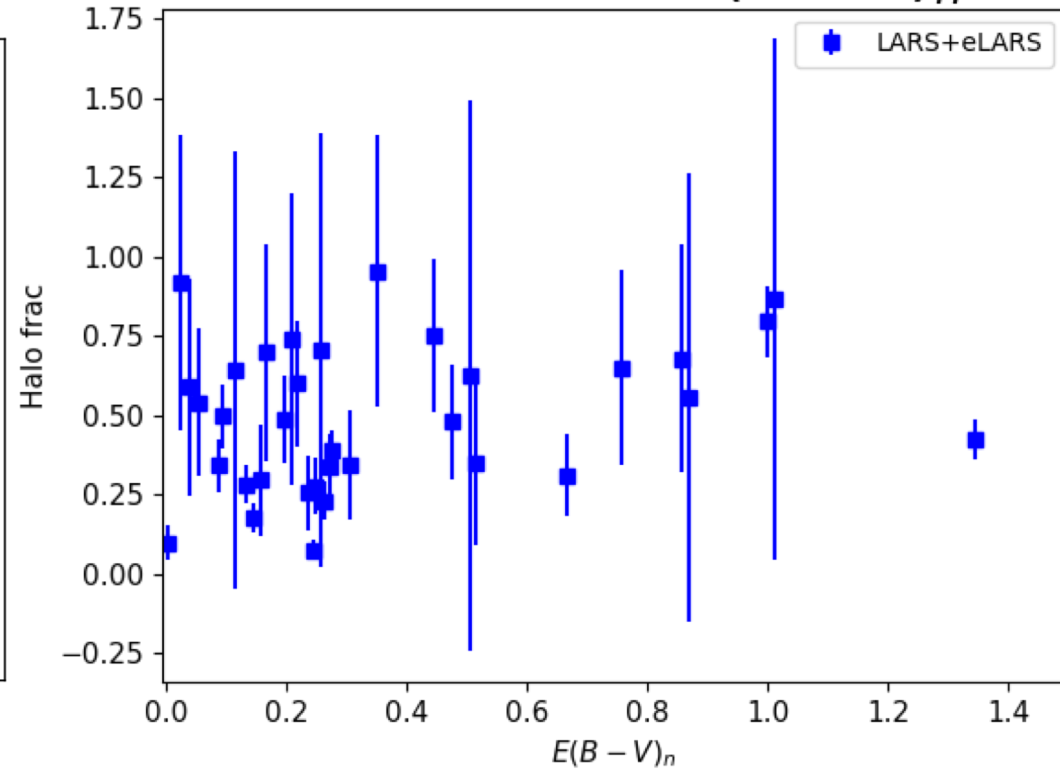


# Results

## Halo frac vs. $L_{Ly\alpha}$



## Halo frac vs. $E(B - V)_n$

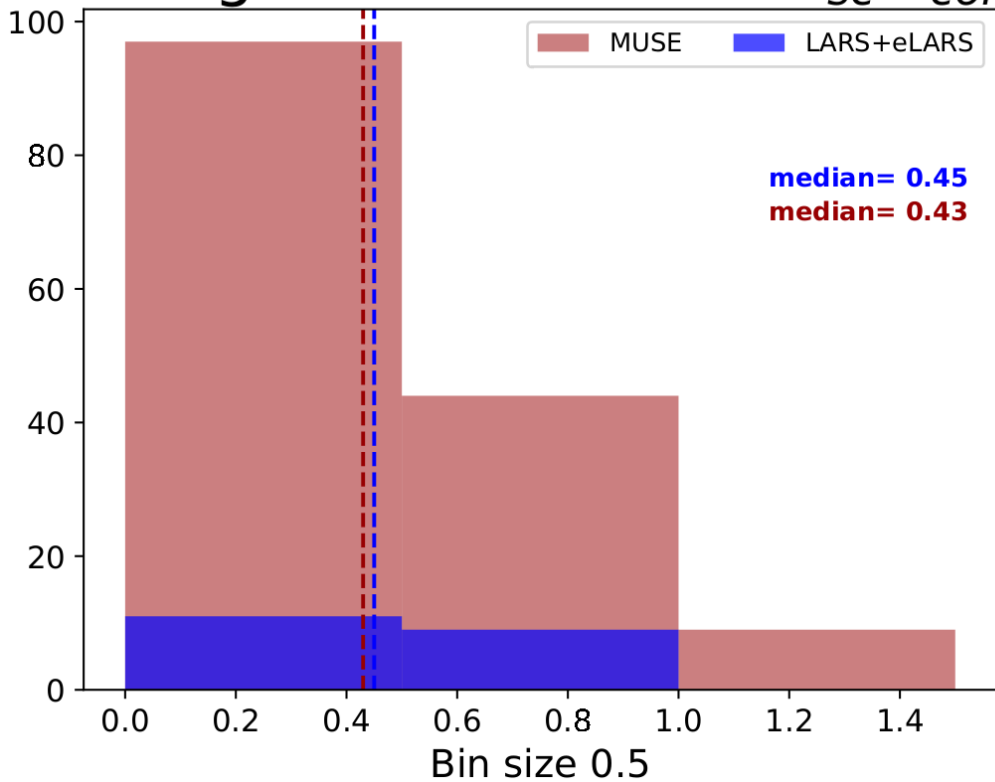


# Convolving the sample to $z=3$

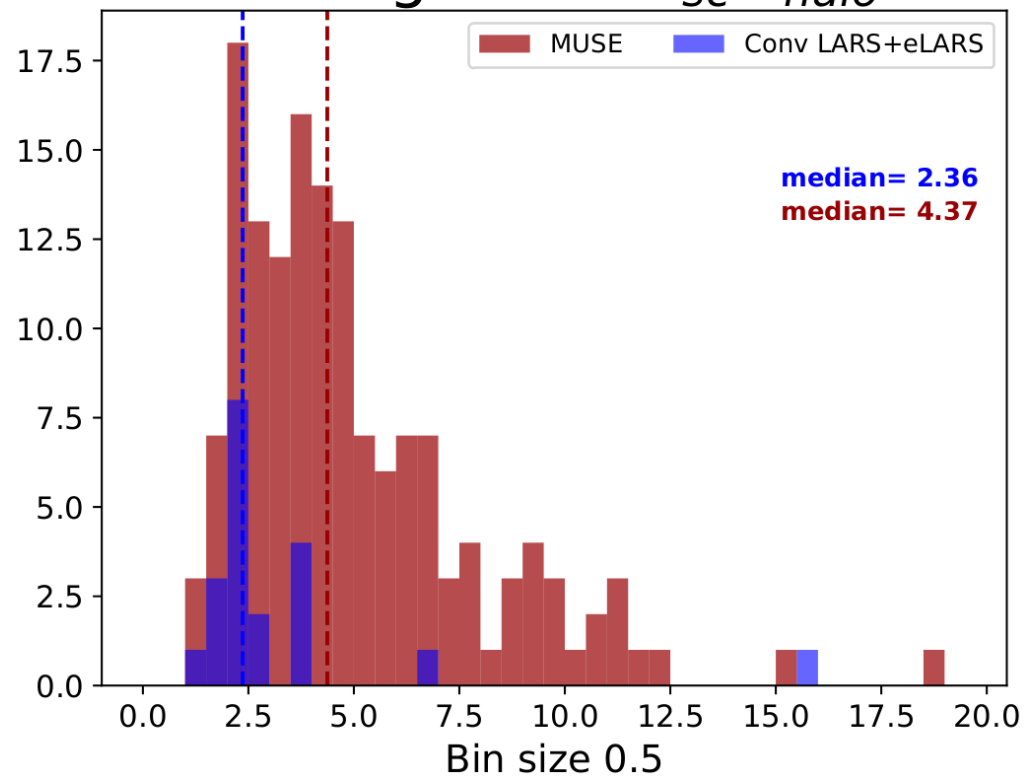
- Measuring the scale length in the non-conv FUV frame for the whole profile
- Convolving with the MUSE seeing and adding another exponential term to fit to the Ly $\alpha$  profile

# Convolution the sample to $z=3$

## Histogram of non-conv $r_{sc} - cont$



## Histogram of $r_{sc} - halo$

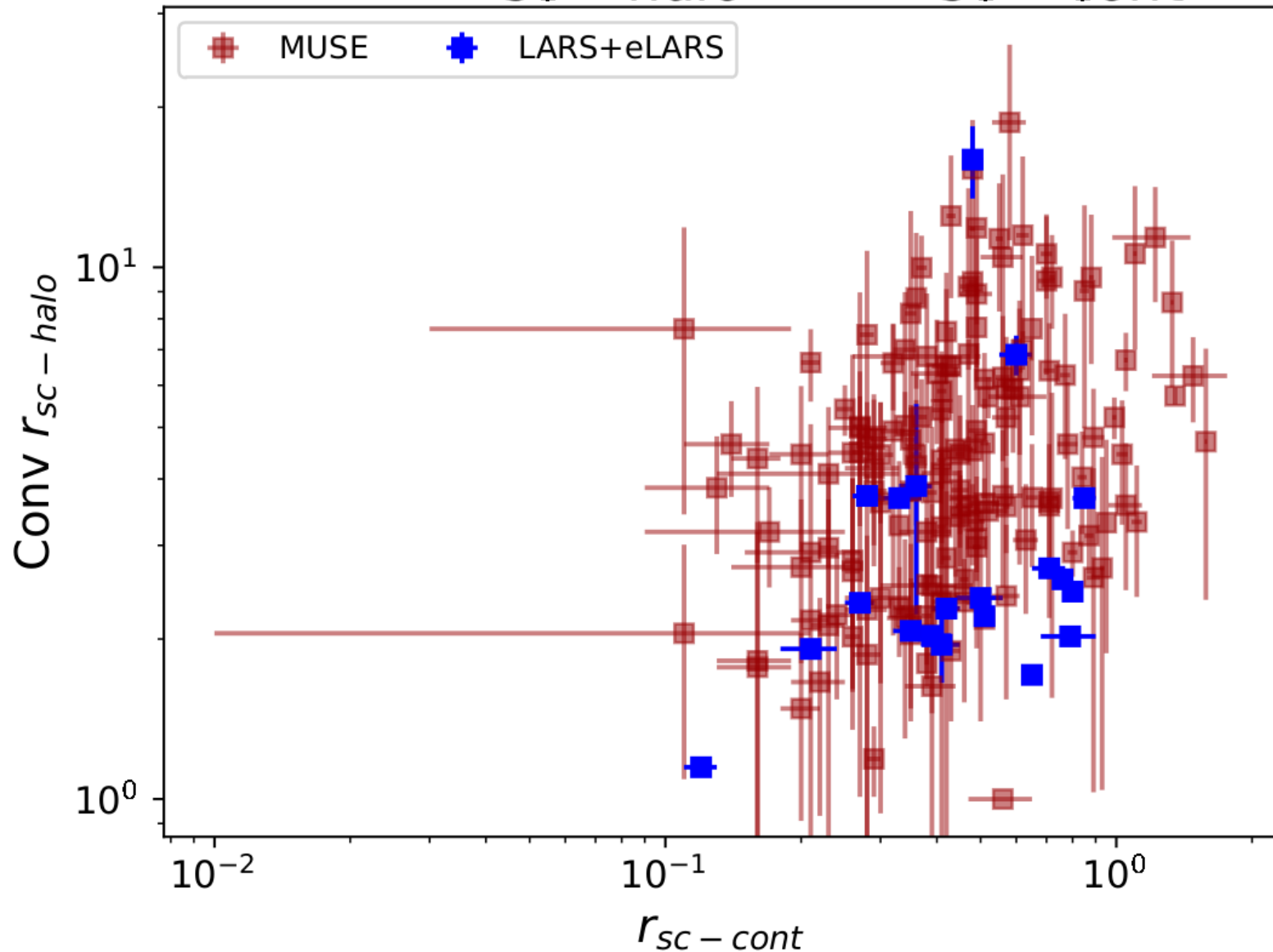


$r_{sc-core}$  fitted to non-conv FUV profile for non-zero halo frac

$r_{sc-halo}$  fitted to conv Ly $\alpha$  profile for non-zero halo frac

# Convoluting the sample to $z=3$

Conv  $r_{sc} - halo$  VS.  $r_{sc} - cont$



# Conclusion

- As expected galaxies with high halo fractions have typically more extended Ly $\alpha$  halo
- No significant (anti-)correlation between Halo frac and:
  - Escape fraction, Ly $\alpha$  EW, Ly $\alpha$  luminosity, Nebular extinction
- Convolved images to  $z=3$  with the MUSE seeing:
  - MUSE halos are more extended than LARS halos

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Thank you :)