

# Creation and Evolution of Ly $\alpha$ halos - clues from low redshift observations

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or

## On the origin of halos

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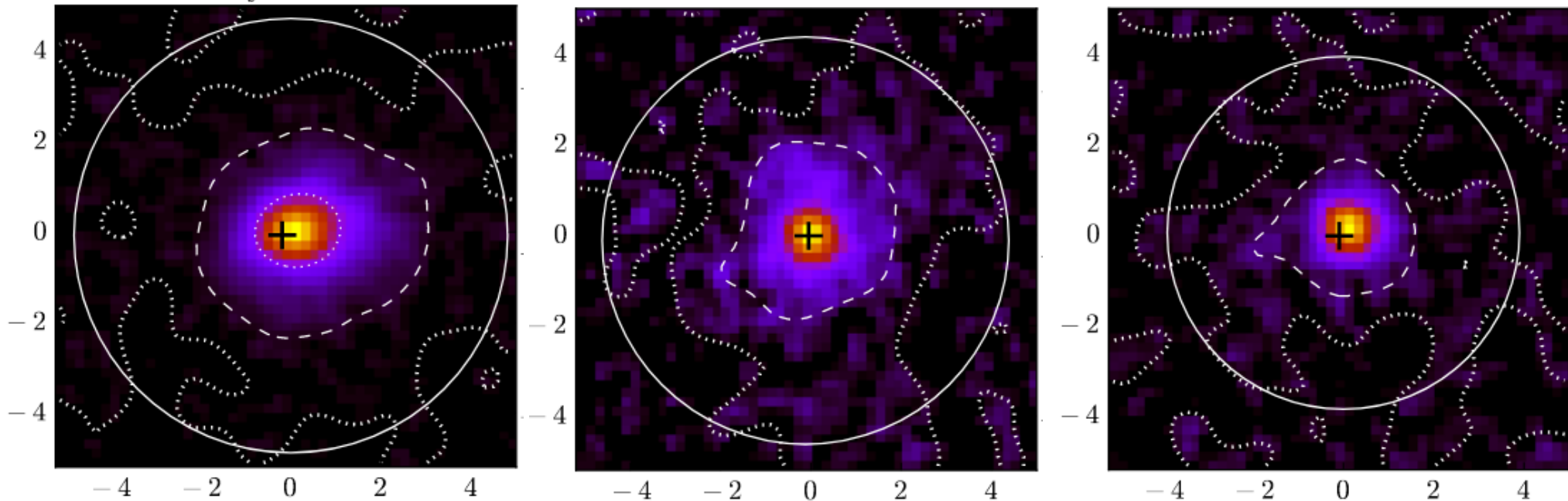
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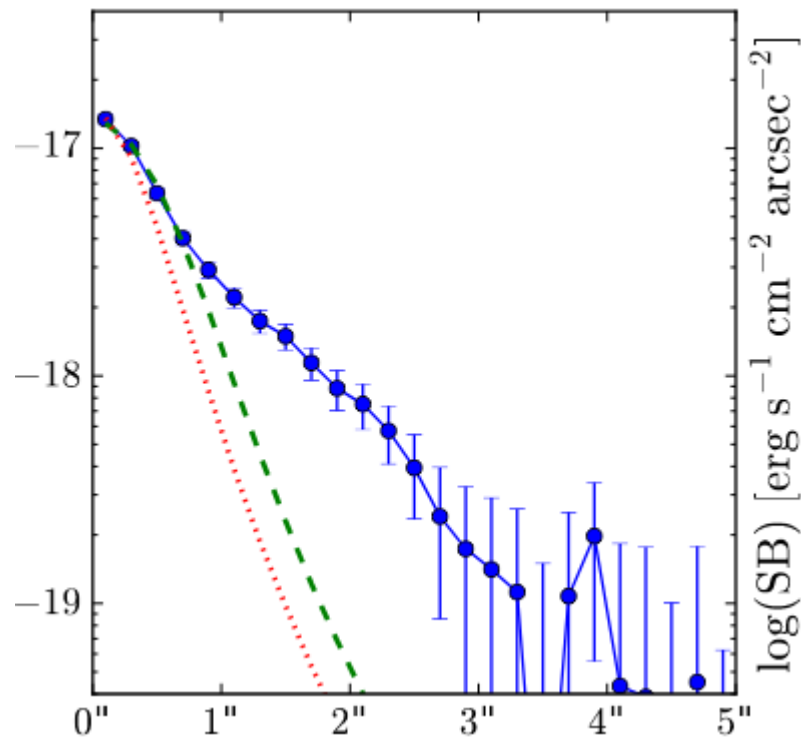
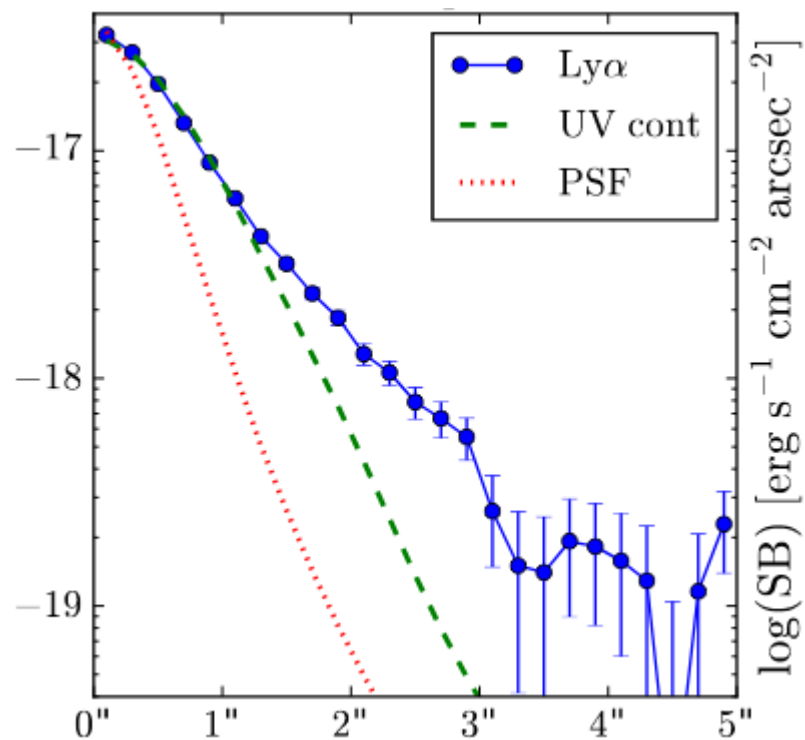
— Ly $\alpha$  is routinely observed at high- $z$

Ly $\alpha$  NB



Leclercq et al 17

Ly $\alpha$  is routinely observed at high-z

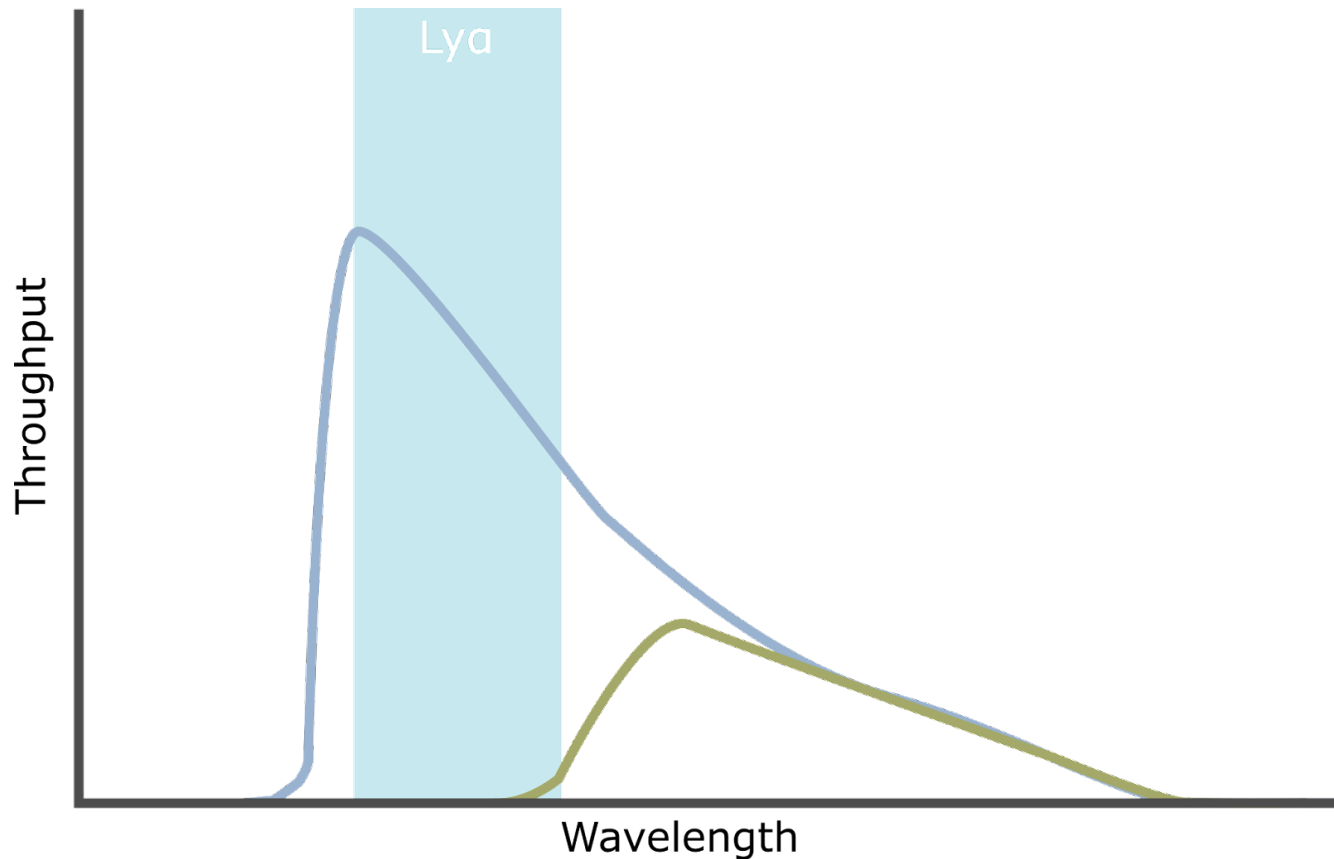


1

# Observing Ly $\alpha$ at low $z$

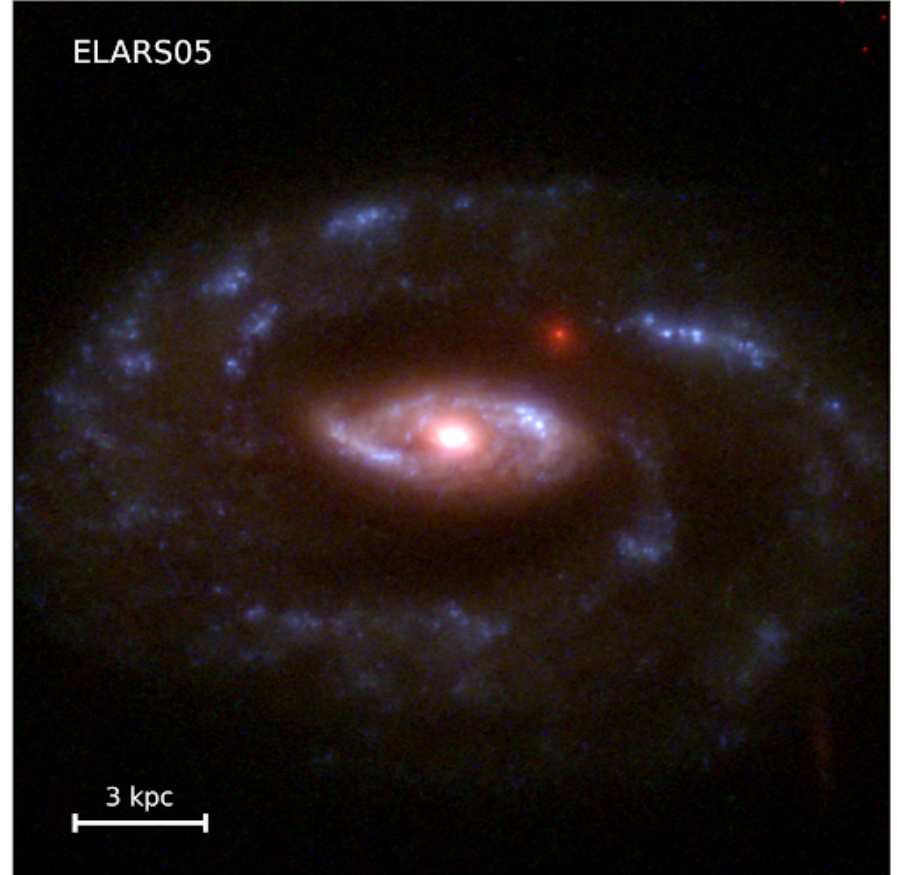
Challenging but potentially rewarding

# Imaging Ly $\alpha$ with HST



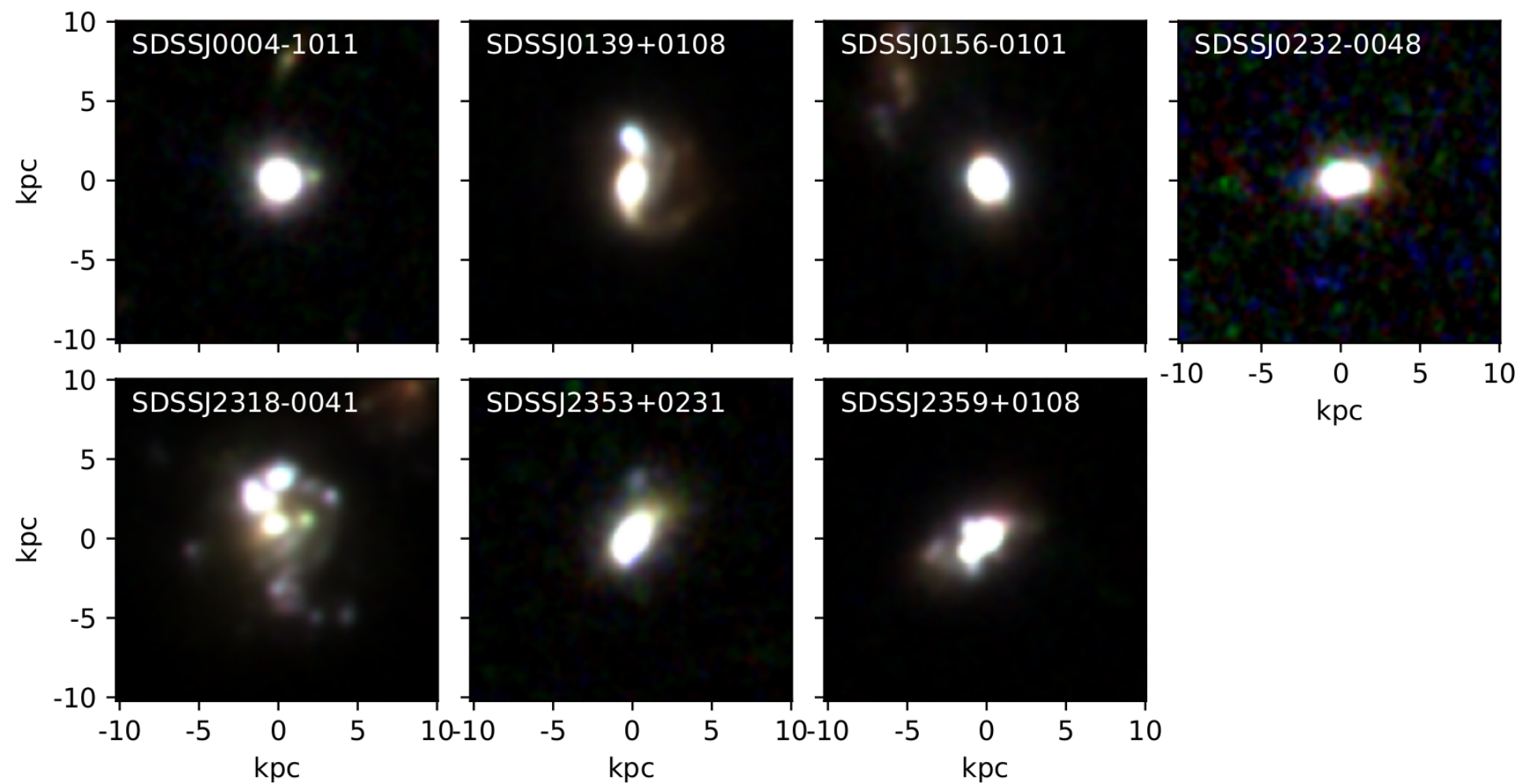
# Challenging to do with LARS

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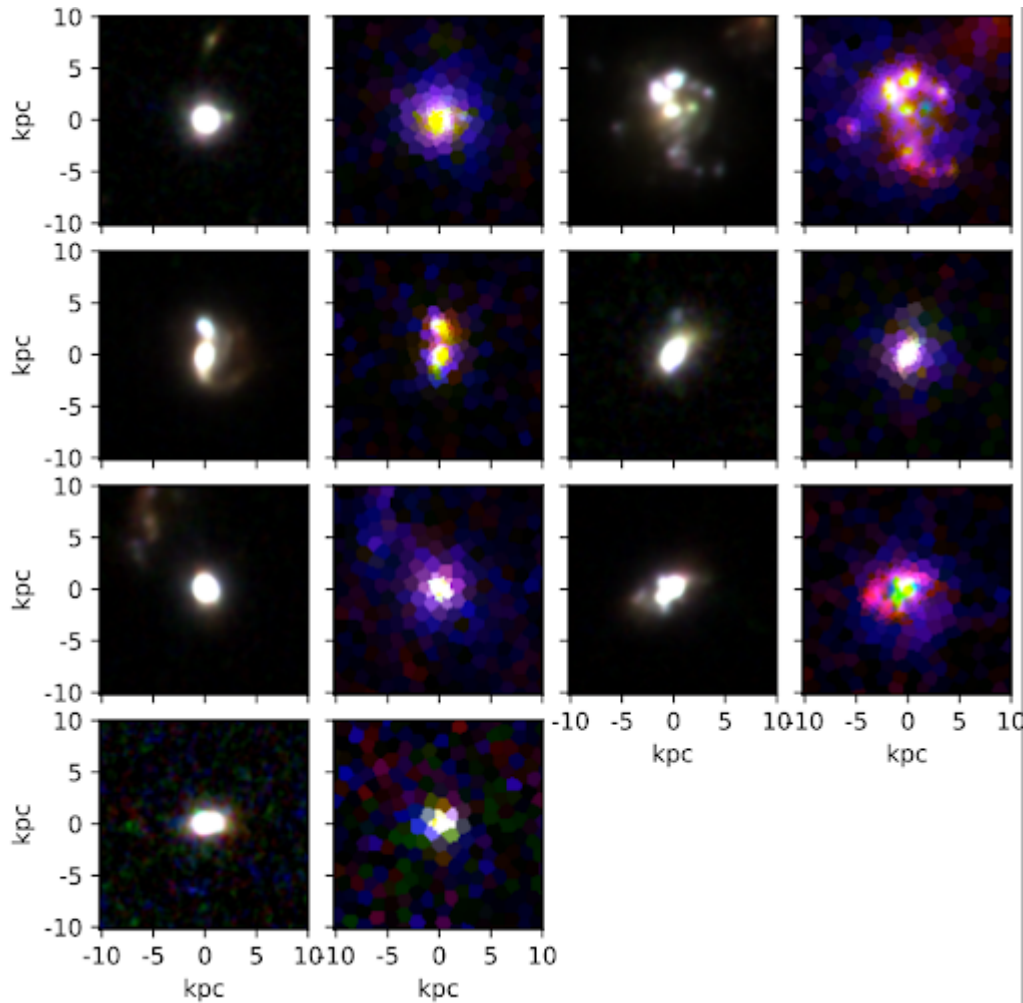




At  $z \sim 0.25$  we can do it



At  $z \sim 0.25$  we can do it





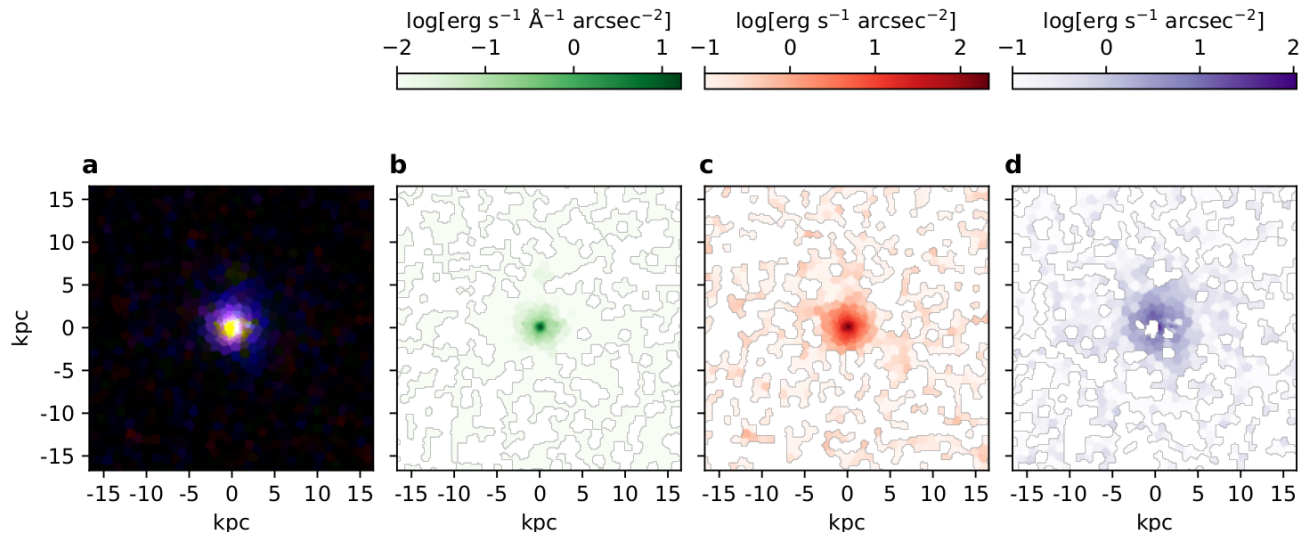
2

## Halos at low redshift

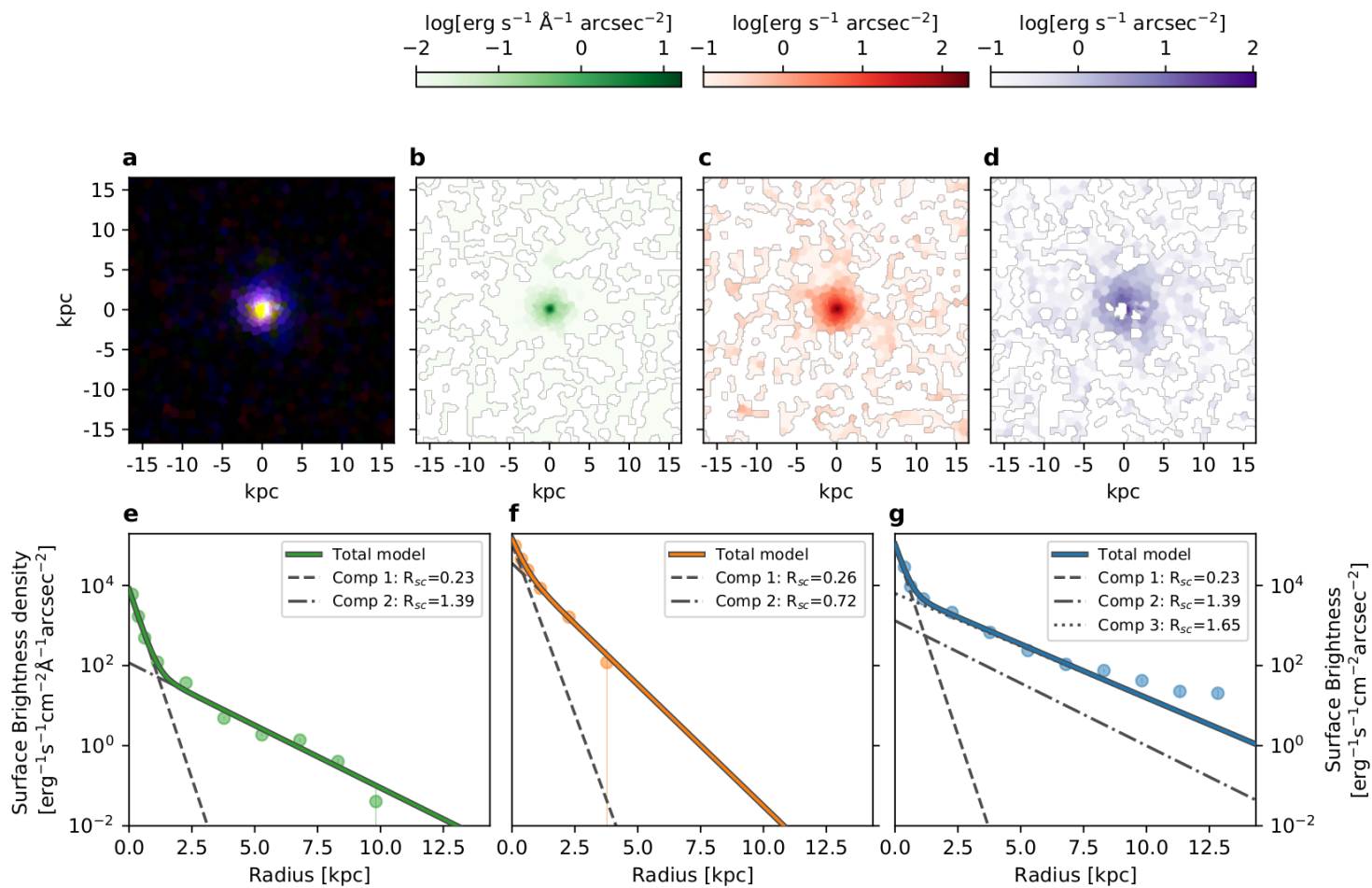
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Surprisingly similar to high- $z$  but not identical

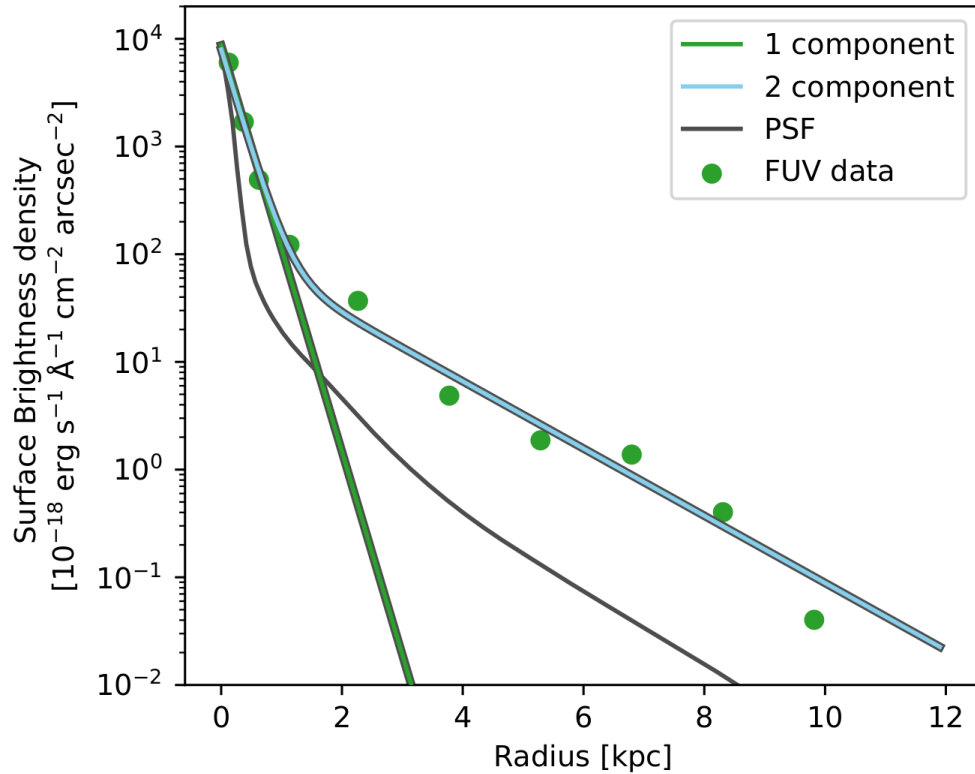
# Halos around 6 out of 7 galaxies



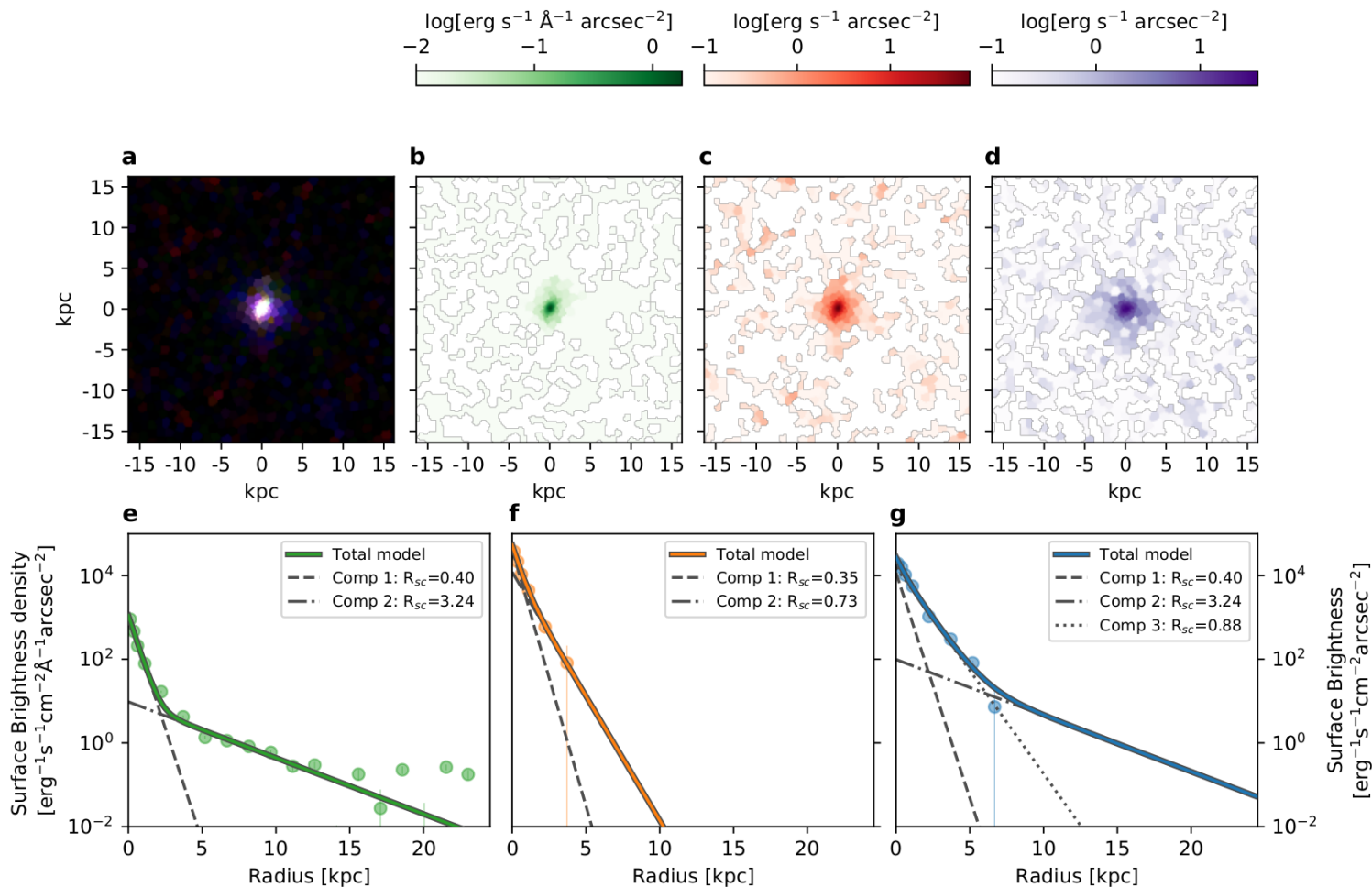
# Halos around 6 out of 7 galaxies



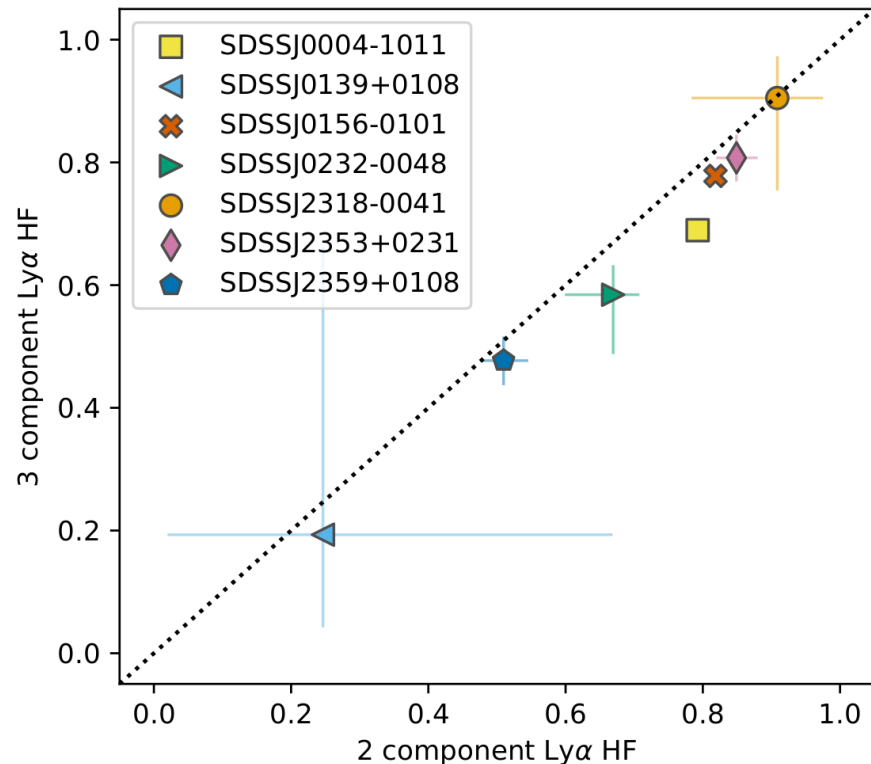
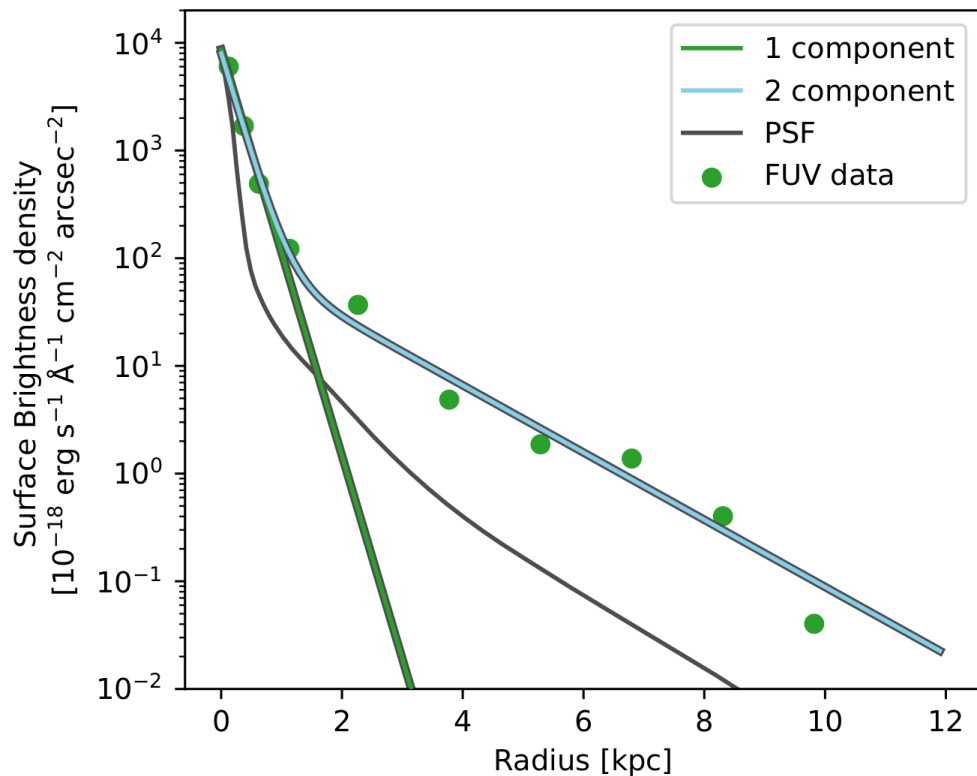
# Extended population of stars



# “Inner excess” rather than classical halo



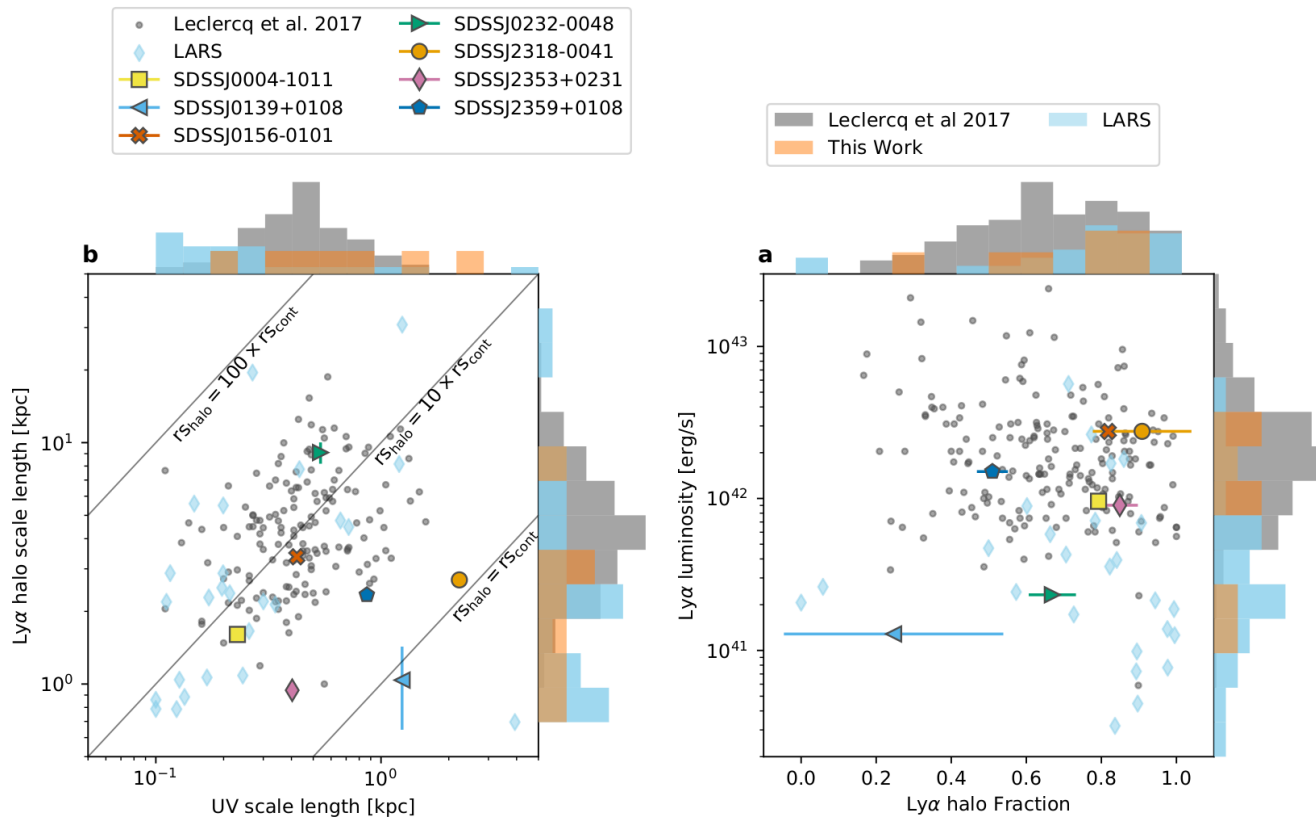
# No strong impact on Ly $\alpha$ halo emission





# Broadly consistent with high redshift

Testing



3

## Deep Ha with MUSE

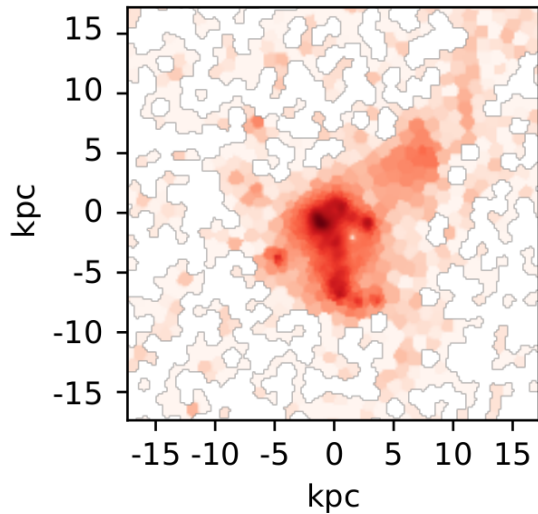
Tracing the production of Ly $\alpha$

Work by Bjarki Björgvinsson

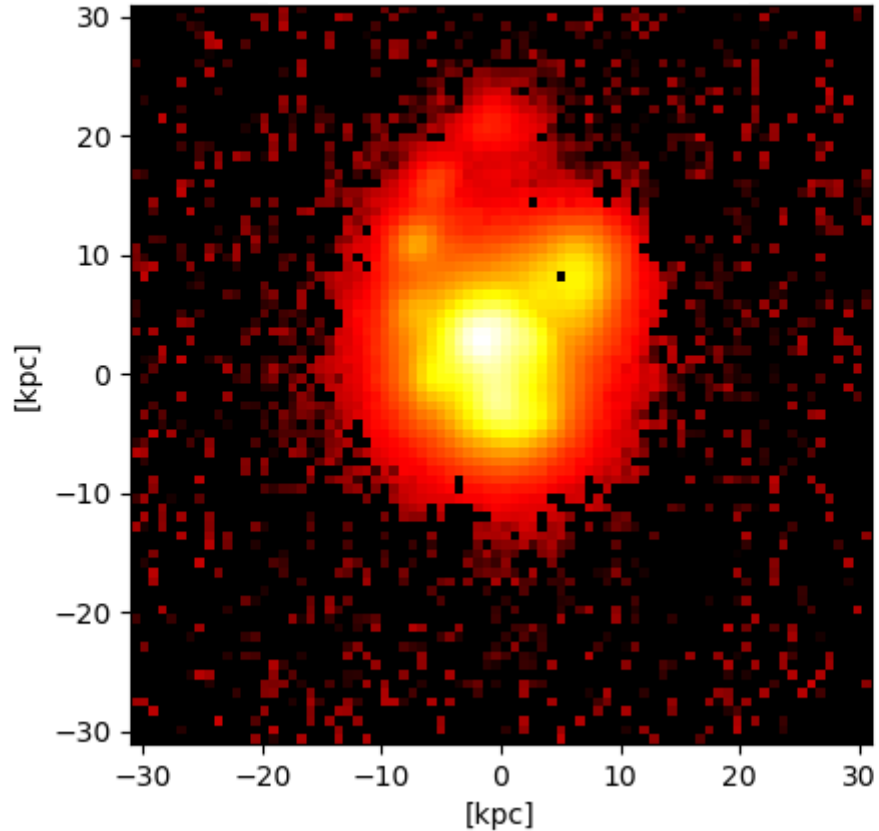
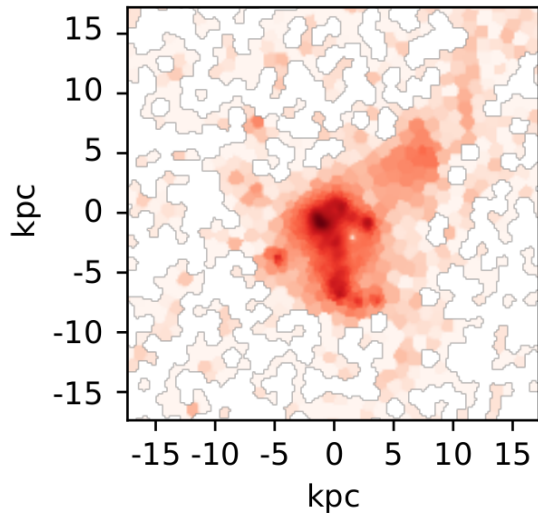
PRELIMINARY

# How is a Ly $\alpha$ halo made?

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# How is a Ly $\alpha$ halo made?



# 4

## Conclusions

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Strong indications of an older more extended stellar pop

Some indication of smaller halo sizes at low-z potentially indication changes in CGM

**Overall little evolution** in Ly $\alpha$  halos to low-z

Deep Ha observations

→ **Halo probably dominated by in-situ Ly $\alpha$  production**