
Searching for Lyman continuum emission in HDUV data from LAEs found in MUSE

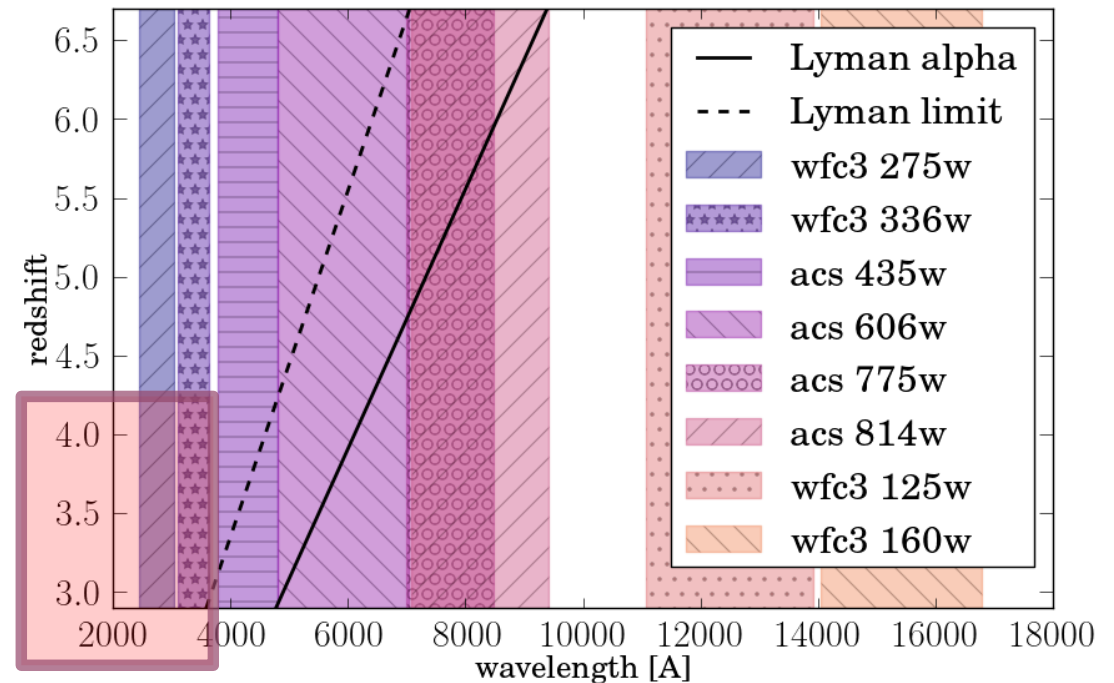
Josie Kerutt

Lutz Wisotzki, Pascal Oesch, Kasper Schmidt, Rikke Saust, Tanya Urrutia,
Anne Verhamme & the MUSE collaboration

Data: MUSE and HDUV



- MUSE-Wide, MUSE-Deep, redshift range for LAEs: 2.9 – 6.7
- HDUV (HST legacy programme, PI Pascal Oesch)
 - bands wfc3 275w and 336w
- For more info on MUSE-Wide: See poster by Tanya Urrutia
- For info on MUSE-Wide LAE halos: See poster by Rikke Saust

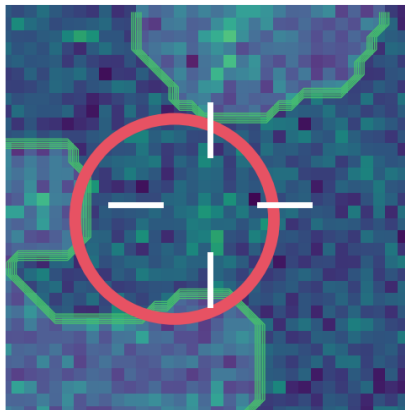


Motivation: finding Lyman continuum emission

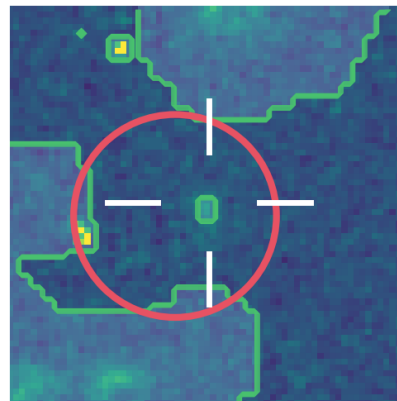
- Motivation:
 - Finding Lyman continuum emission in LAEs found with MUSE
 - Both in individual objects as well as in stacks
 - Analyse possible connection between Lyman continuum leakage and Lyman alpha escape (e.g. Verhamme+2015, Dijkstra+2016)
 - Stacking subsets of LAEs based on profile features

We found ~10 Lyman continuum leaker candidates

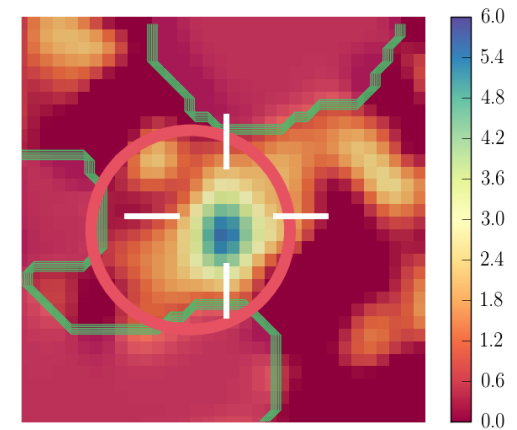
- Selecting LAEs, discarding interlopers, masking bright neighbours



Mask in wfc3 336w

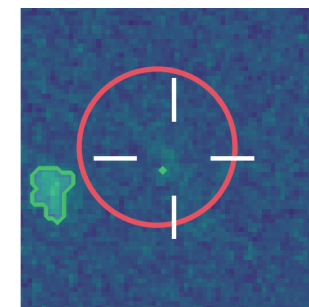
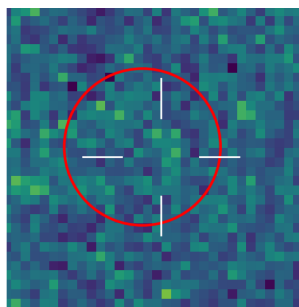
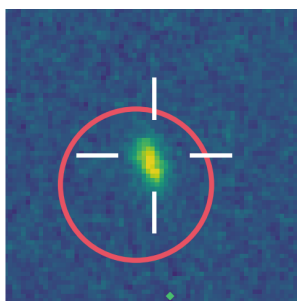
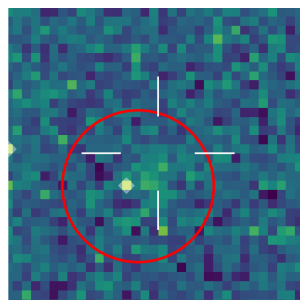
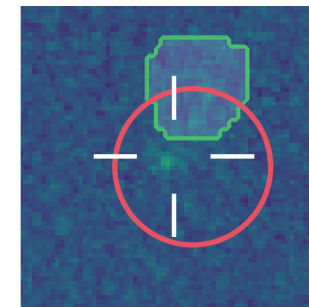
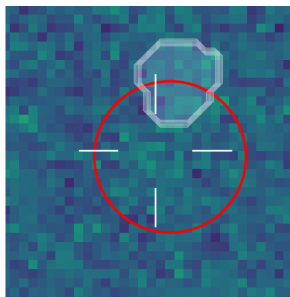
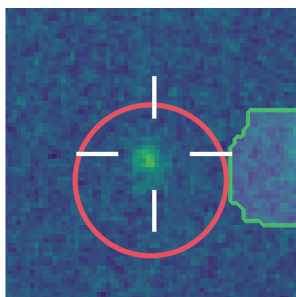
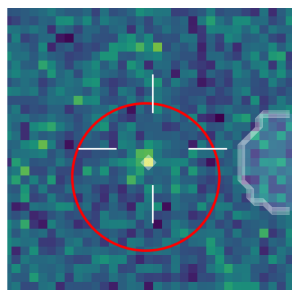
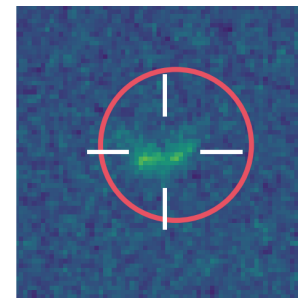
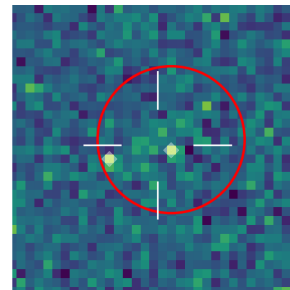
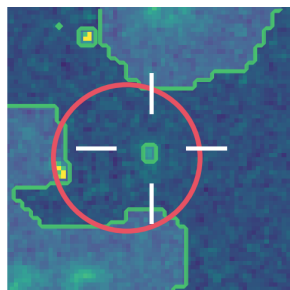
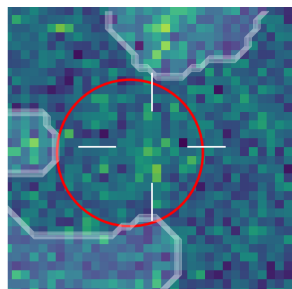


Mask in acs 814w



detection

6 Lyman continuum leaker candidates in MUSE-Wide



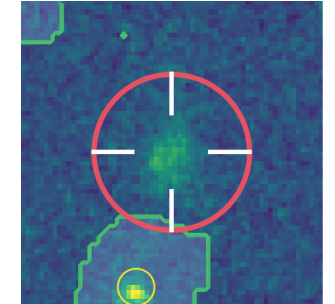
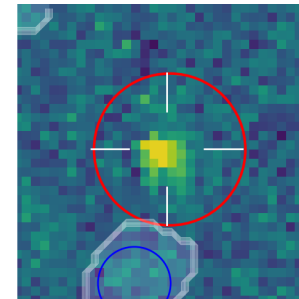
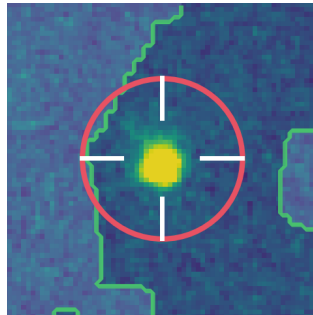
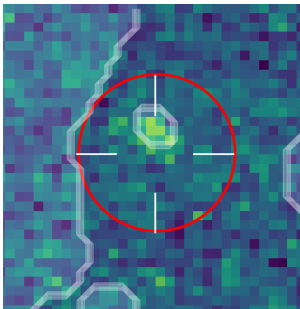
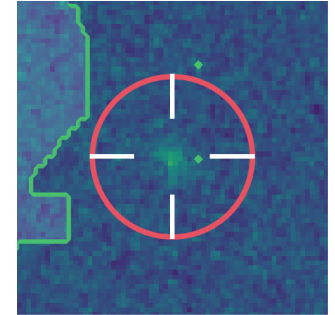
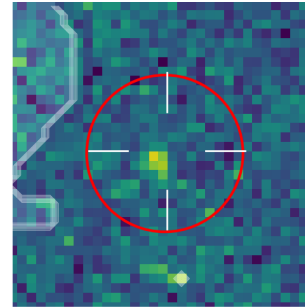
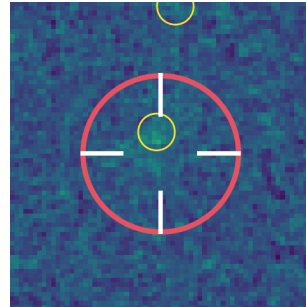
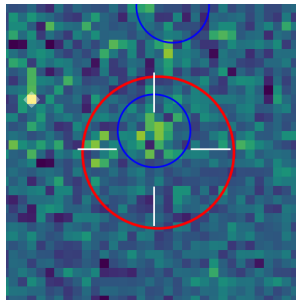
wfc3 336w

acs 814w

wfc3 336w

acs 814w

5 Lyman continuum leaker candidates in MUSE-Deep ?



?

wfc3 336w

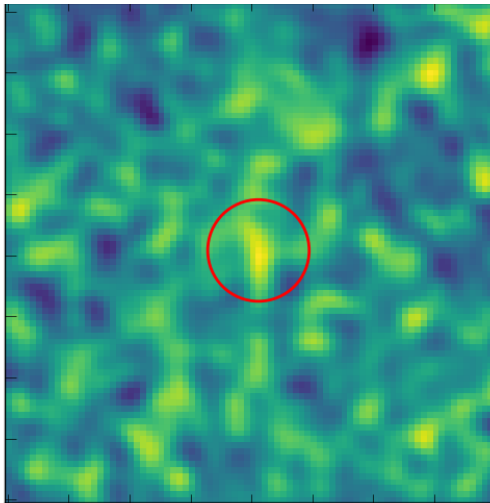
acs 814w

wfc3 336w

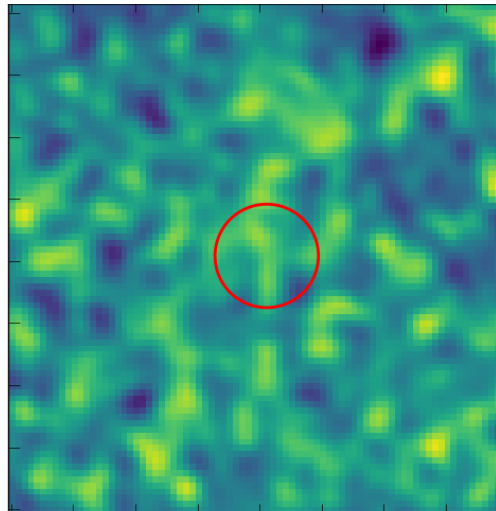
acs 814w

Stacking of UV data

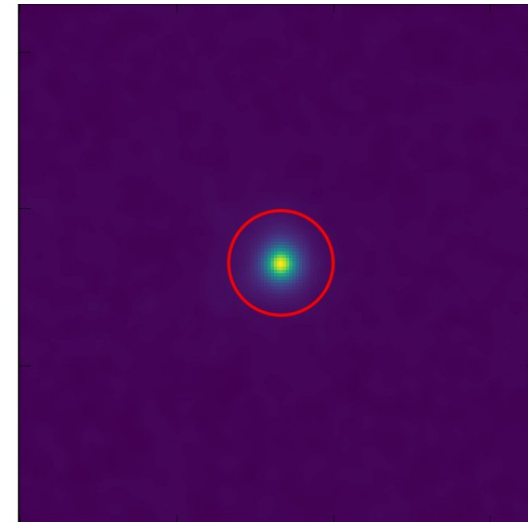
Stacks of 280 objects ($3.06 < z < 3.9$)



336w with LyC candidates
S/N: 4.01

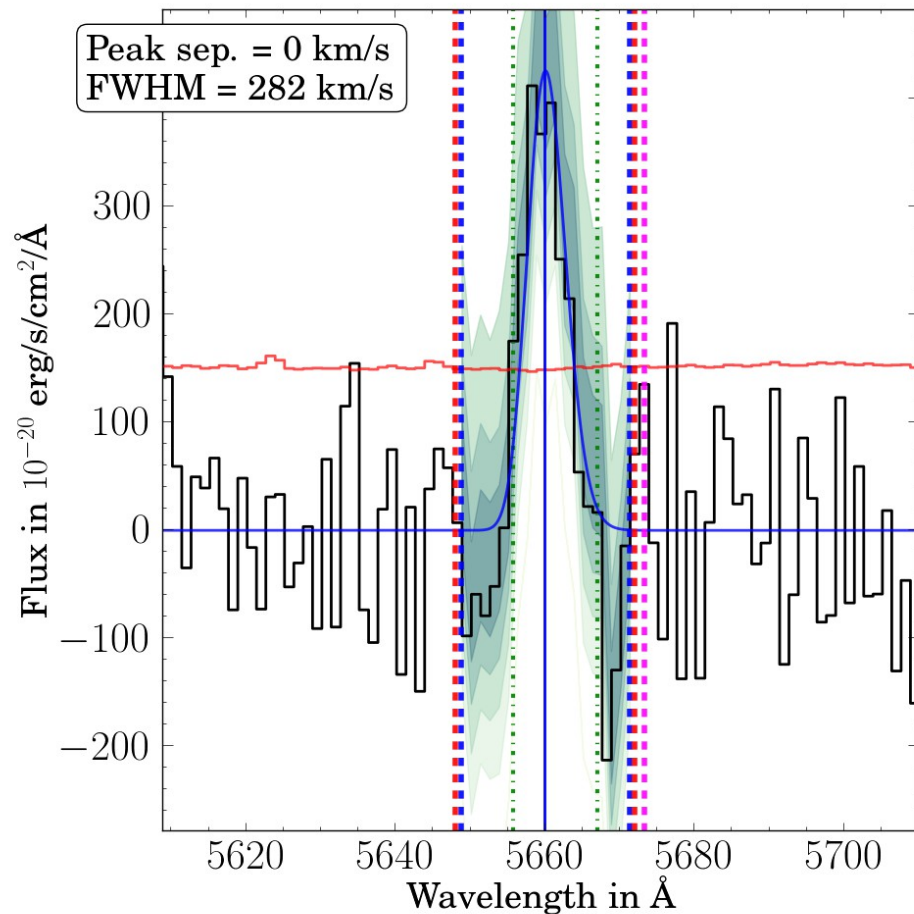


without LyC candidates
S/N: 2.77



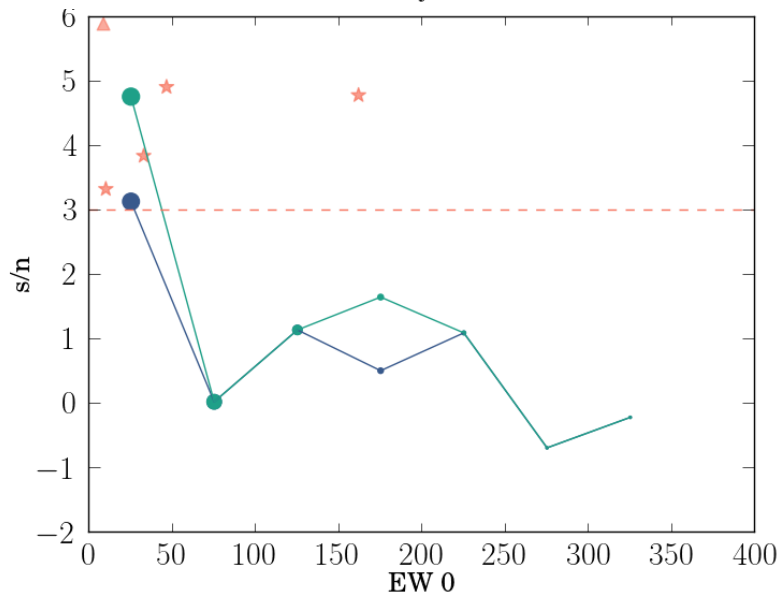
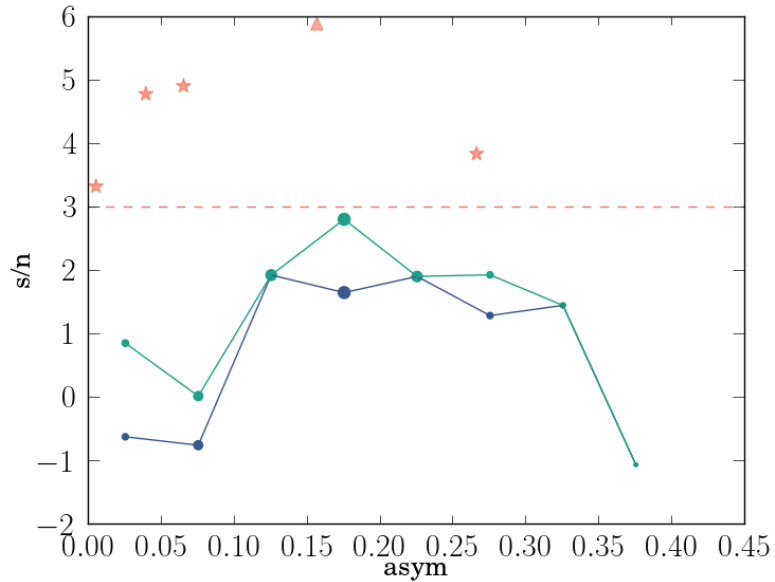
814w stack
S/N: 39.41

Stacking by line shape properties - fitting the line



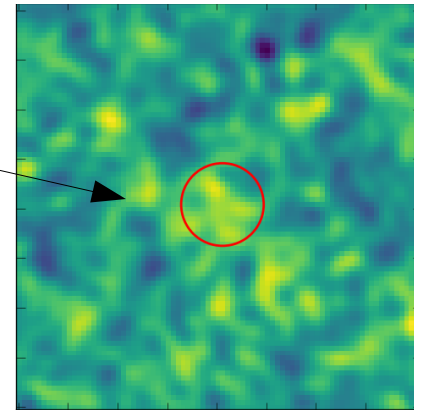
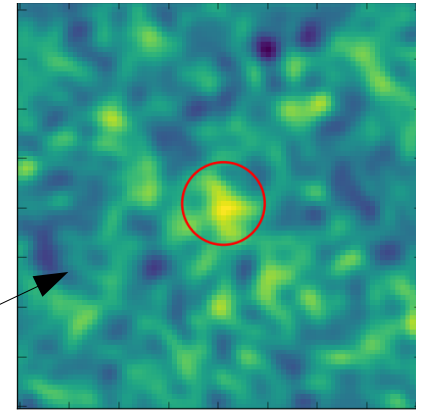
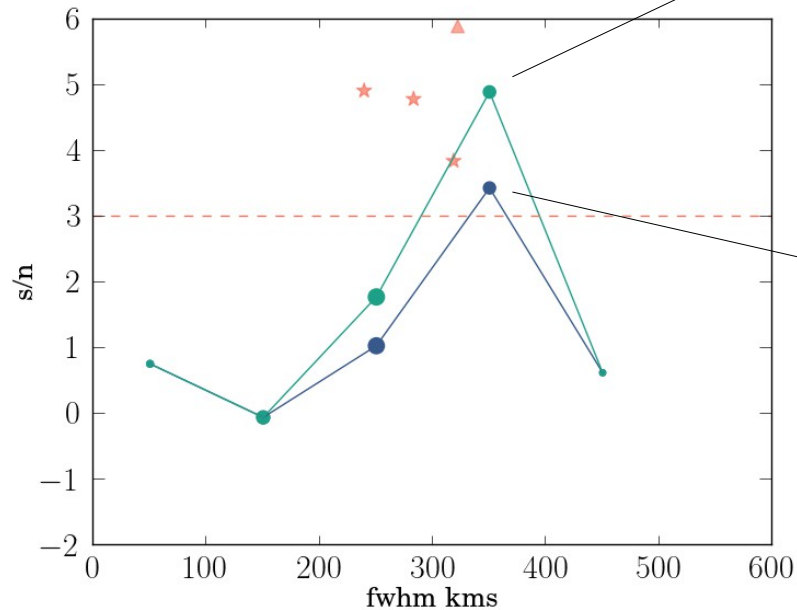
- Line shape properties predicted to correlate with Lyman continuum:
 - Fwhm
 - Equivalent width
 - Peak separation

Line shapes connected to Lyman continuum



Ideal LyC leaker candidates seem to be:

- a bit asymmetric
- low EWs
- mean width



Stacking HST data of MUSE LAEs to find Lyman continuum emission

- Conclusions
 - We find ~10 Lyman continuum candidates
 - We find a signal in Lyman continuum for full stack
 - We find possible connection between line shape properties and Lyman continuum leakage
- To Do:
 - Take IGM into account to get escape fractions