Moderated Discussion 3

Session Chair: Matthew Hayes

Discussion Moderator: Johan Richard

Wednesday, March 28, 2018 - Morning

Participants, please use this space to enter your questions to speakers about their talk or suggest issues for discussion during moderated discussion at the end of the session.
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Two examples,

- (Your Name). Question for (Speaker Name): Type your question here.
- (Your Name). General question: Type your question here.
- Tanya Urrutia for Chris Martin: I am wondering about your initial assumption of them being disks. How about just a turbulent medium being dominated by the radial inflow? Why do they have to be protodisks?
- Andrea Ferrara for Haruka Kusakabe: I have the impression that your halos are much smaller than those observed by MUSE Wide and reported yesterday by Lutz (50 kpc) although you both reach comparable levels in SB O(1e-21 cgs). Can you comment on the possible differences? [Shimasaku: Rieko may be a better person to answer it]
  [->HK for Andrea: Our work is based on Fig. 7 in R. Momose et al. 2016, which shows the extend emission up to ~40--50 pkpc. Probably she will explain the details. If we use L(Lya)_H within r<50 pkpc, the obtained L(Lya)H is expected to be consistent with that within r<40kpc within the errorbar.] [RM for Andrea: The value of the Lyman-alpha extent in Haruka's slide (r ~40 kpc) is obtained based on SB limit of a stacked image. However, diffuse emission extends more than r ~40 kpc. So both scale-lengths and extents of Lyman-alpha halos of our study are about consistent with Lutz's results.]
- Johan Richard for Haruka Kusakabe: is the fluorescence scenario really negligible for normal star forming galaxies and does not need to be tested? [SC: happy to discuss that, our calculations in Gallego+2018 show that it should not be negligible even for low f_esc(ion). H-alpha will give the “definitive” answer to all the discussion…] [JB: indeed]
  [Shimasaku: How bright are Gallego+'s Lya halos? Haruka's Lya halos may require too high f_esc(ion). SG: the Lya halos in our sample are around 1e42 erg/s]
  [->HK for Johan and others: L(Lya)_H of our LAEs is brighter than L(Lya)_C (>1e42 erg/s). Is it possible for Lya photons produced from SF to ionize the HI gas at the center part (disk/HII region) and outer halo at the same time? We think that it requires much higher fesc(ion). The fesc(Lya) is high (~30-80%) even if we do not include the LAH component. Of course, we’d like to test the fluorescence scenario. I just asked Sofia about the comparison with models...
  Ha spectroscopic observation will give more accurate measurement.]

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- Masami Ouchi for Floriane Leclercq: You have concluded that there are no correlations between the Lya halo scale length and the EW/luminosity. In your plots, it appeared to me that there may exist a correlation. Have you ever checked it by statistical tests? Or are there any strong selection effects or /measurement systematics that does not allow you to conduct statistical tests?
- (please write your name?) : Does the larger FWHM at large R from Floriane conflict with the narrowing peak separation from Dawn?
- Kazuhiro Shimasaku for Floriane Leclercq: Most of your two-parameter plots show large scatters. What do you think is the origin of them?
- Seiji Fujimoto for Floriane Leclercq: You show the correlation between the FWHM of line width and the Lya halo size. Is it because of the inclination ? Do you already obtain any interpretations from the HST rest-frame UV data ?
- Koki Kakiichi for Momose, Kusakabe, Leclercq: Given that there is little physical basis for scale length (r_n) coming from the exponential profile fit (although it is good fit to the scale probed), does it make sense to search for correlation between scale length and other properties e.g. EW etc? Could the Lya halo fraction which seems to be more independent of a particular functional fit be a better tracer of Lya halo size?
  [HK: I agree with you, taking into account the results in Leclercq+17 & Momose+16. So we focus on relations of L(Lya)H (and X(Lya)H/tot).][RM for Koki: I also agree with you and Haruka's opinion. Moreover, examining growth curve of Lyman-alpha luminosity can also be a good way to compare the extent of Lyman-alpha halo.]
- Huan Yang for Floriane Leclercq: Some LAEs in your sample show double-peaked LyA profiles. In your 3D fit of LyA profiles, how do you fit these double-peaked profiles with one Gaussian profile? Or do you only fit the red peak?
- Andrea Ferrara for Yuichi Matsuda: are the UV absorption/scattering coefficients for the high-beta dust lab analogs been measured? Are they consistent with any known extinction curve?
- Andrea Ferrara for Seb Cantalupo: are simulations underpredicting the SB include the RT of the QSO ionizing radiation (proximity) or just the UVB? Or ..what else?
- Max Gronke for Sebastiano Cantalupo: (i) What’s the resolution of the two EAGLE runs? (ii) Can you elaborate a bit on your “turbulent” model?
- Yuichi Matsuda for Seb Cantalupo: How can you subtract sky from your MUSE cube when the Lya structure is comparable with or larger than the FoV?

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- Kazuhiro Shimasaku for Ryota Kakuma: Undetection of
- fluctuations may be just because of "dilutions" of UV emission owing to a large redshift coverage of BB. Do you have some upper limit to the absolute UV surface brightness?
- Kazuhiro Shimasaku for Ryota Kakuma: What do you think causes the discrepancy between your and Rieko's measurements on the overlapping scale?
- Koki Kakiichi for Ryota Kakuma: Can you rule out that the large-scale LAE-Lya intensity cross-correlation is caused by the clustering of the faint unseen (S/N<5) sources from your LAE-broad z- or y-band cross-correlation, or set a upper limit to the contribution from galaxies? [Shimasaku, similar question] Johan: I believe this was asked during the presentation by Lutz. Shimasaku: thanks, I missed it. [Ryota:We have not done quantitative comparison. I will check them. Thank you.]
- Zheng Zheng for Ryota Kakuma, on the overlapped scales, why Momose et al did not “see” the signal you detected through cross-correlation? [Shimasaku, same question two points above]
  [Ryota: They use image stacking and we use cross-correlation. We are debating the difference of them now.] [Zheng Zheng: cross-correlation is also “stacking”.] [Ryota: and though we use HSC data, Momose used SC data. Our data is much larger than that of them. And, their error is larger especially in large scale, so we have to compare considering with that error.]
- Jin Wu for Ryota Kakuma: Can you do a 'blank field test' , apply your method for random selected position to see if there is signal in large radius? [Jin: when i do stack, i use this simulation to test my sky subtraction method to see if it has any bias.] [Ryota: Yes, I have done blank field test. We randomly choose Non-LAE galaxies from G-dropout galaxies, and check the cross-correlation signal between Non-LAEs and NB images. Then we found that Non-LAEs(i.e. random point) does not show extend profile.
- Max Gronke for Ting-Wen Lan: can you say something about the kinematics (e.g., velocity dispersion) of the clouds? [TW: Yes (from another dataset). The velocity dispersion is around ~100 km/s]