

Dear editor and referee;

We thank the referee for this constructive and insightful report, which we write below along with our comments in italics. We also resubmit the paper with the revisions highlighted in bold face except for a few trivial corrections.

Referee Report

The paper contains a concise but fairly complete analysis of the ISM properties of component C in nearby starburst galaxy Haro 11, with the main aim of explaining its Ly α and LyC emission.

I could not find any major problems with the paper, except that the English could be improved in places. Also, in light of the motivations for this study given in the introduction, the paper should conclude with some implications or discussions for high redshift galaxies during reionization, instead of just the sober reporting of the numerical values of the column densities found in knot C of Haro 11. This would make the paper far more appealing and useful to a wider cross-section of the community.

Minor comments:

Section 1

- the very first sentence is too long, with too many comma-separated parts that do not really go well together. Please rewrite.

The sentence has been rewritten.

- at escape fractions \rightarrow with escape fractions

This has been corrected twice in this paragraph.

- reionization, too, but \rightarrow not clear why “too” appears here

“Too” has been deleted.

- “higher neutral gas mass” \rightarrow probably better to write “higher neutral gas mass (surface) density”

This suggestion has been implemented.

- suggest how these \rightarrow suggests how these

This has also been implemented

- In (Rivera-Thorsen et al., submitted to ApJ) \rightarrow remove parentheses (the same problem appears throughout the paper)

Three instances of this have been corrected.

- that both knot B and knot C \rightarrow note that at this point, the galaxy Haro 11 has not even been introduced yet! It will be completely unclear to the reader what you are referring to here.

A clear oversight. I added a short, introductory paragraph about the galaxy.

- wrt. \rightarrow this abbreviation is probably not allowed

This has been replaced with “relative to”.

- This component reaches as far → not sure what is meant here: has a physical scale size of ~200 pc? has a distance of 200 pc?

Replaced “reaches” with “extends”.

- Recently, the galaxy → again, Haro 11 has not been introduced yet, so it is not clear what “the galaxy” refers to

This should hopefully be clearer with the added introductory paragraph above.

- wrt.

has also here been replaced with “relative to”.

- the ongoing merger event → what merger event? Again, the paper lacks a basic description of Haro 11

This should again hopefully be remedied by the above mentioned introductory paragraph.

- The Lya profile in this spectrum is discussed in Verhamme et al. (2015) → please write “is ALSO discussed in Verhamme et al. (2015)” (it had already been discussed in Heckman et al. 2011)

Added a mention of Heckman et al. 2011 along with Verhamme 2015 at this point.

- define the acronyms LIS and HIS

Added short definitions in the text.

- We measure...from knot C. → this sentence is much too long and confusing. Please break up in at least two sentences.

This paragraph has now been broken up into 3 shorter sentences. Also added definition of the AOD acronym.

Section 1.1

- We used archival...surrounding continuum. → It was not clear what the first and second part of this sentence have to do with each other. Please rewrite.

I have attempted to clarify this without going into too much detail.

- in blue tinting → in blue (color) (“tinting” is a verb)

The word “tinting” has been removed.

Figure 3

- is the distribution in the bottom panel well described by a Gaussian? If not, does this have impact on the results?

A short comment about this has been added at the end of this section.

Figure 5

- AOD not defined

A definition has been added in the previous section.

- I0 → I₀

This has now been corrected

Section 3.1

- The picture...central cluster. -> sentence needs to be broken up, it is not logical.

This sentence has been broken up and rewritten

- where also a component is found -> not clear what is meant by that

This sentence has also been slightly rewritten and, hopefully, clarified.

Figure 7

- Full line is the measured values -> indicates the measured values

This suggestion has been implemented.

- averaged, LIS line profile, smoothed -> too many commas

One redundant comma removed, this should hopefully make the meaning clearer.

- In fig. 1...background source. -> too many commas, rendering the meaning unclear.

The sentence has been slightly rewritten and is hopefully clearer now.

- w.r.t.

As before, this has been replaced by "relative to".

Section 3.2

- same way is in [Puschnig]-> same way AS in Puschnig...

This has been corrected along with the use of brackets.

- Furthermore; -> Furthermore,

Has been corrected but not highlighted.

- the pure riddled ionization bounded scenario -> it was not clear what was meant by the "pure riddled scenario", this is the first time the word "pure" appears

"pure" has not been changed to "strong", along with the addition of a short explanation.

- seems consistent with what is found in the Green Pea galaxies of (Henry et al. 2015) -> seems consistent with what is found in Lyman Break Analogs and Green Pea galaxies (Heckman et al. 2011, Henry et al. 2015). -(note that the small subset of GP galaxies that have these kind of UV properties are actually Lyman Break Analogs; in fact, the Henry et al. sample contains objects (and COS data) from the LBA sample of Overzier et al. 2009 and Heckman et al. 2011).

This suggestion has been implemented.

Section 3.4

- define AOD

This has been done above in sect. 1.

Section 3.5

- rise → arise

This has been implemented.

Section 3.6

- the main star forming knot → what is the evidence that knot C is “the main star forming knot” ?

This sentence has been rewritten to avoid suggesting that this knot is more important than the others. Knot C is indeed, probably, slightly more massive than knot B, but this is not of any relevance to this work.

- units of HI column density missing here, and throughout the paper

We have added the missing units except where the densities are given as log N. These have not been highlighted in the newest version

- I suggest adding a concluding paragraph related to implications/interpretations for/of high redshift galaxies, tying the motivations given in the introduction to the conclusions of the paper.

A closing paragraph has been added to the conclusion, tying the present results to their context in galaxy evolution and reionization.

Other changes:

- “Lyman continuum” has throughout the paper been changed to “LyC” after the definition of the latter abbreviation.
- Where spelled out, it is now consistently “Lyman continuum” without a hyphen.
- Likewise, the abstract has been polished a bit to also hint at implications for EoR and Gal.Ev. context.
- Better references have been given for the definition of the Picket Fence Model.
- AOD spelled out to become Apparent Optical Depth in caption of fig. 5.
- Caption in fig. 4 has been updated to tell that the data shown is smoothed for clarity, but unsmoothed data are used for computations.
- Abstract has been shortened to the allowed 250 words.