Abstract Evaluation

Name of Editor: Sophie Lebowitz

Identify the below sections in the abstract – if you identify them, copy and paste the text/summarize as instructed. In all cases, add comments if: something is missing, the text could be made clearer and/or the arguments stronger.

* Started with one or two facts that relate to the problem statement (copy them here)

Observations of high-redshift quasars put rigorous constraints on supermassive black hole seeds and provides efficient probes of the intergalactic medium (IGM) evolution during the epoch of reionization.

* Explained why these facts are important (copy line here)

The IGM damping wing absorption imprinted in z>7 quasar Lyman α emission can be directly used to measure the IGM neutral fraction.

I’m not sure I understand how this connects to the stated fact about placing constraints on SMBH seeds. It justifies how it allows you to probe the IGM, but doesn’t touch on why probing the IGM or placing constraints on SMBH seeds is important. Why do we want constraints on SMBH seeds? Why do we want to probe the IGM during the reionization era?

* Introduced the problem (rewrite the problem in your own words)

However, due to limited bright quasars at z>7, only two such measurements have been achieved at z>7.

Need to study high-z quasars to probe IGM and constrain SMBH seeds, but these quasars are very bright so only two observations exist. Need more observations.

* Stated the goal (copy it here)

We have discovered a new quasar, DES J025216.64-050331.8, (hereafter J0252) at z=7.00 and its Gemini/GMOS optical spectroscopy shows a strong absorption feature near the Lyman α emission, requiring high quality NIR observations to investigate the origin of the absorption.

Goal is to investigate the origin of the absorption feature.

* What is the key component? (your words)

Keck/NIRES NIR observations

* What is the target? (your words)

J0252

* Explained the strategy. (copy here)

1. measure the black hole mass and the Eddington ratio of J0252; (2) study the origin of the absorption features near the J0252 Lyman α emission; (3) reconstruct the intrinsic emission of J0252 using the state-of-the-art model developed by Davis et al., and further measure the IGM neutral fraction at z=7.0.

* Stated the importance of the solution *to the subfield*  (copy here)

This program will shed light on the growth of supermassive black holes in the early universe and will be critical for the IGM study at z=7.

I would recommend expanding on this a bit more. Do you mean critical for studying the evolution of the IGM? Its content?

* Explained the broader implications of results to *other subfields*  (copy here)

This program will shed light on the growth of supermassive black holes in the early universe and will be critical for the IGM study at z=7.

I would recommend linking the growth of supermassive black holes to something broader, such as galaxy evolution to drive the point that learning about how supermassive black holes grow is important for some greater picture idea.