Abstract Evaluation

Name of Editor: \_\_Jeniveve Pearson\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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)

“These planets undergo a myriad of evolutionary processes shortly after formation, leading to two distinct populations: super-Earths and sub-Neptunes.”

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

“Planets in the 1 - 4 R\_Earth radius regime seem to be the most common product of planet formation.” <- I hate the word “seem” here. I know you set this up as a fact but this is more of a importance statement, if most planets are these types then of course we need to study them. Use more strong language to make it a fact or rewrite so that it isn’t controversial.

“K2-25b is a recently discovered sub-Neptune (R ~ 3.5 R\_Earth) around an M dwarf star in one of the youngest (~600 - 800 Myr old) planetary systems yet discovered, but its mass remains unconstrained.” <- Mention something about how this system provides a unique laboratory into early planet formation. Take out the yet, better yet rephrase this as more of a fact so that it transitions into the importance section. Something like “The recently observed sub-Neptune, K2-25b, is one of the youngest planetary systems discovered, and it offers a unique laboratory to constraint the properties of planet formation” I don’t really know how to end that but something like that.

“The stellar obliquity is directly connected to the dynamical history of the planetary system and has only been measured for 3 other M dwarfs.” <- This seems like it should go much earlier in the abstract, especially since it is part 2 of your goal. Why does this matter?

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

The evolutionary processes which lead to super-Earths versus sub-Neptunes are not well constrained. <- If you care about the stellar obliquity you need to mention it earlier because it seems like an afterthought goal

* Stated the goal (copy it here)

“We propose for Habitable-zone Planet Finder (HPF) radial-velocity observations of the K2-25 system. With these observaitons, (1) we will make the first mass constraint of this young planet, and (2) estimate the stellar obliquity of K2-25.”

* What is the key component? (your words)

High resolution Habitable-zone Planet Finder radial velocity observations

* What is the target? (your words)

The super young sub-Neptune planet found in K2-25

* Explained the strategy. (copy here)

“The high resolution of HPF is uniquely suited to measuring the signal of planets of this size. <- I am assuming that the HPF getting the signal will allow for a mass estimate, but it might be a good idea to spend a few words to link to that explicitly. I would also link more strongly to the next sentence. I.E. we need K2-25b’s mass to model xyz thus revealing the nature of this young world

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

“…measuring this obliquity will shed light into the dynamics that led to K2-25b’s current status...” <- I’ve mentioned my issue with this aspect multiple times already.

“These results, coupled with K2-25b’s unique status as a young planet, will offer an unprecedented window into the evolution of super-Earth and sub-Neptune planets” <- Nice

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

“…provide new empirical constraints on planetary system dynamics.” <- This is well argued throughout the abstract.

“…as well as contributing a novel window into the dynamics of M dwarf systems in general” <- You don’t explain why I care about M dwarf systems at all, why care about M stars?

General Comments:

There is a lot going on here, but I think you can make it work by restructuring the sentience order. You don’t set up anything about stellar obliquity at the beginning of the abstract which makes it difficult to follow since you seem to keep adding things to do.