**4.7 CONCLUSIONS & FUTURE WORK**

P204 “to make constraints on the underlying parameters of interacting galaxies.” Maybe say “to apply constraints to the underlying parameters …etc” Next sentence should also perhaps say “We applied these constraints, and explored the underlying parameter space, through directly comparing input images to output simulations.

P205 “We are able to recover the true parameter…etc “ Bit of past and present tense mash up. In the previous sentence you say you applied (past tense)something (past tense) and in this sentence you are in the present. Maybe better to say “We were able to recover…etc”

P205 Para starting with “To test our MCMC” Actually there are a few areas in this paragraph showing a bit of past/ present tense mix ups. Would not take long to change it to past tense for consistency For eample “We were able to explore” and “We explored” and We took” etc

In the next paragraph suggest you change “In this work we find it is that, without…etc” to “In this work we found iit is that, without…etc”

P205 “When tested on observational data of our best fit synthetic systems, we were able to retain the excellent constraints on nine of the thirteen parameters, losing any constraint on the orientations” Seems to be something missing here? Perhaps the word “without” after the comma?

P205 “It is not impossible that there are systems… Maybe just say “it is possible / probable..”

P206 2nd para “We will aim to reproduce our results here, applied to the observed dataset of our 51 interacting systems in SDSS.” Not a vrey clear sentence?

P206 3rd para “The main limitation of this method is the computational expense of it.” Maybe better to say “The main limitation of this method is the computational expense associated with it”

SUMMARY AND FUTURE WORK - 5.1 SUMMARY

P207 “By utilising newly developed data-access architecture with the newly developed Bayesian CNN Zoobot the largest catalogue of interacting galaxies to date was created.” Needs a comma after Zoobot - I think

P207 and 208 “We investigated whether the often conflicting 175 5.1 SUMMARY theories about galaxy interaction were, in fact, from not accounting for interaction stage based on observed morphology.” Is it missing the word “as a result ” as in “were, in fact, as a result of not accounting..etc”

P208 “We find a complete disconnect with the projected separation and stage, noting that conflicting…” some tense mixing. Maybe should say “We found..”

P208 last para “We combine a fast, efficient restricted numerical simulation with a MCMC methodology and Bayesian statistics and put constraints on the underlying parameters of 38 simulated interacting systems. Should be “We combined..”? and instead of “put” suggest “ placed”

P209 2ND para “Thus, I have created a large interacting galaxy dataset and demonstrated it’s capability in the context of how the progression of a galaxy changes the underlying properties of galaxies. We have introduced a method by which further…” Delighted to see the I word but it’s a odds with the we that follows immediately?

**5.2 FUTURE WORK - 5.2.1 Catalogues of Galaxy Morphology with Ancillary Data**

P209 quite a few thus’s have started to appear in these paragraphs?

P209 5.2.1 - 2nd para “This platform has also been heavily updated to, not only, provide access to many different observatory’s archives within it (such as JWST and Euclid) but has access to much larger storage spaces and GPUs.” Suggest lose the commas and add the word also after the but and before has?

P210 1st para “Thus, ESA Datalabs now allows us to conduct a project similar to Chapter 2 with much greater efficiency.” Another thus but also should it say “to conduct a project similar to the one outlined in Chapter 2”

P210 Para 2 “We can also take this further, and not just create of large catalogues …etc” – suggest “and not limit the opportunity here to only large catalogues of morphology classification.“ Lose the comma as well?

Same para – another thus – “Thus, by applying..”

Page 210 last para “Thus, even without…” Nothing wrong with thus but when overused it becomes a distraction?

**5.2.2 Constraining Interacting Galaxy Parameters**

P211 1st para “We were made constraints and…” Word or words missing

P211 1st para “However, the limitation of this approach was the computational expense, taking between 15-20 hours per system.” I get what you mean but you say expense but then state a time constraint? Should it end by saying “taking between 15-20 hours per system with the associated run time cost for this”

P211 1st para – comment There does seem to be significant overlap between the first para here when talking about GPU’s atc and tha previous section final paragraph? Also another Thus makes an appearance

P211 2nd para “A second approach would be to move away from the direct, brute force method and into utilising simulation based inference (SBI” What is the brute force method being referred to here?

P212 1st para “Once this is developed,…etc” Maybe say “Once this has evolved..?

P212 1st para “This does have some caveats, however.” Normally stated as “This does come with some caveats..”