Grading Rubric : Research Assignment 2

Name:

1 Introduction 10/ 10

Each of the below points should be a separate paragraph in your introduction.

1. Define the Proposed Topic. 1/1
2. State why this topic matters to our understanding of galaxy evolution. 2/2
3. Overview our current understanding of the topic. 2/2
4. What are the open questions in the field? 2/2
5. Cite at least 3 journal papers. Use BibTex for formatting citations - if you don't know what this is, come to office hours. 1/1
6. Include at least one figure from those papers to motivate your work. 2/2

2. The Proposal 9/ 10

You must answer each of the below questions as separate subsections.

1. What specific question(s) will you be addressing? 1/1

2. How will you approach the problem using the simulation data? Here you should outline the codes you'd need to write. It can be in general terms. 4/5

3. Include at least one figure that illustrates your methodology. 2/2

4.What is your hypothesis of what you will find? Why do you think this will occur? 2/2

3. Misc. (5/5)

1. Proper Grammar 1/1
2. Included a bibliography 1/1
3. In Latex and ApJ/MNRAS formatting 2/2
4. On Time/On Github 1/1

TOTAL 24/25

NOTES:

PROPOSAL:

- The methods could use some more details. :
    - What snapshot of the simulation are you going to use and why?
    - How will you combine the data from M31 and the MW together?
    - You are going to be explicitly assuming a M/L ratio of 1 to turn density profile into light profiles?
    - I'm not sure what you mean by searching for "new bulge and disk stars" – do you mean that you will combine all the bulge and disk particles together (not assuming that one is bulge or disk apriori) and then use two sersic profiles to split out a "bulge" and "disk" component? That sounds reasonable to me. If you mean to split out the bulge and disk based on their kinematics (a rotating component vs a dispersion component) that is also doable, but might be trickier – need more details for how you will do this.

- You might want to follow an approach like in Lab 7 where we rotated the galaxy so that its angular momentum vector was aligned with the z axis. This will enable you to make velocity maps or phase diagrams of the merger remnant that can help you pull out a rotation signal.
- Note that doing the sersic decomposition is sufficient for the report and you do not need to also do the kinematic profile.
- For the sersic profile fitting, note that you should compute the light profile using spherical shells – in the relevant lab we computed the density profile using the mass enclosed within a spherical volume. Instead compute the density profile using the mass enclosed within a shell of thickness deltaR .
- Note that your github Repo is hard to read – try to organize it a bit better to make it clearer where your final products you want evaluated are located.