Grading Rubric : ASTR400B Research Assignment 2

Name: [Quirk,Colton James Ramler](https://github.com/coltonq112358/ASTR400B)

**A Introduction 8 / 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 1/1
6. Include at least one figure with caption from those papers to motivate your work. 0/2

**B. The Proposal 10 / 10**

They 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. 5/5
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

**C. 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** 23**/25**

**Late Penalty:**

* if submitted on due date, but after 5 PM  **(-5 points).**
* Proposals will **not be accepted** after the due date.

**Comments: -2: no figure in the introduction.**

**For your project you do not need to include the merger remnant since the question is about the role of galaxy interactions (tidal forces) on how the galaxy circular speeds evolve. So stop the analysis before the galaxy merger itself.**

**The goal is to understand if tides significantly disrupt the circular orbital motions of stars in the galactic disks. To do this I suggest:**

1. **Compute rotation curves for MW and M31 using the circular speed of disk stars only computed as the average v\_$\phi$ in cylindrical coordinates as a function of radius (turn velocities into cylindrical coordinates and average in spherical shells - meet with Himansh if confused how to do this).**
2. **You can still use phase diagrams and plot the results of #1 on top.**
3. **You can do this calculation at only a few key snapshots (e.g. at the beginning of the simulation, as they come closer to each other for the first time, first pass, after the first pass, before they come together again) - that way you can relate changes in the circular speeds of the stars directly to changes in the tidal field and discuss this in the analysis.**

**otherwise there isn’t a really big change in the code you are proposing vs what was done in the labs/homeworks.**