Grading Rubric : ASTR400B Research Assignment 2

Name: [Kress,Virginia Veronica](https://github.com/virginia-kress/ASTR-400B)

**A Introduction 7 / 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. 1/2
4. What are the open questions in the field? 1/2
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. 1/2

**B. The Proposal 5/ 10**

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

1. What specific question(s) will you be addressing? 0/1
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. 3/5
3. Include at least one figure that illustrates your methodology. 0/2
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** 17**/25**

**Late Penalty:**

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

**Comments: -1: need more context of the equations you have mentioned in the intro. -1: need some generic open questions in the field in addition to open questions related to M33. -1: you need to interpret the figure and write the caption yourself. -1: what specific problem will you be addressing ? -2: what exact plots will you be making ? Context of equation 5 is not clear. We know the orbit of M33 is decaying. You could just compute the mass within some radius in M33 to show whether it’s losing mass. -2: no figure that illustrates your methods.**

**For your question – What is the mass loss rate of M33 as a function of time and how this impacts the orbit.**

* **What mass loss are you referring to → Dark matter is your topic so it should be the dark matter halo**
* **Use the Jacobi Radius calculation rather than the tidal radius. In Lecture 9 we covered why the Jacobi Radius is more appropriate than the Tidal Radius. Please talk to Prof Besla if this isn’t clear.**
* **Compute the amount of mass outside the Jacobi Radius as a function of time and plot the mass loss or fraction of mass outside Jacobi Radius vs. initial M33 halo mass (snapshot 0).**
* **Relate the changes in mass loss to M33’s orbit with respect to M31 that was computed in Homework 6.**
* **For the discussion you can think about how mass loss impacts the orbit. The dynamical friction formula you included will be discussed in class and we will do a lab soon based on it so you can use that Lab to help inform this discussion.**