Grading Rubric : ASTR400B Research Assignment 2

Name: [Burt,Christian Anthony](https://github.com/bloingles/astr-400b)

**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 6 / 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. 2/2
4. What is your hypothesis of what you will find? Why do you think this will occur? 1/2

**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** 19**/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 for introduction, -1: how is the specific question in the proposal section connected to the paper title or the introduction ? -2: need more details on how you actually plan to identify the bar. Talk to us. -1: justification for your hypothesis.**

**Looking for stars ejected from the bar as a topic isn’t well matched to your introduction. The prompt for this project in the research assignment 2 instructions was to consider the evolution of the bars during galaxy interactions (before the galaxies merge).**

**E.g. Proposal Idea: How is the size of the bars in the MW and M31 expected to evolve over the course of their future interactions?**

**Method:**

1. **Identify key points in the simulation using the orbit you computed in Homework 6. E.g. pericenter (closest approach) and apocenter (furthest approach) , etc prior to the merger.**
2. **Identify the bar in each galaxy. It’s easiest to pick out the bar using contours on a face on projection (Lab 7)**
3. **you can fit an ellipse to the bar and use the semi-major axis of that ellipse to determine the bar radius.**
4. **Examine how the bar radius changes at the different points in the interaction.**

**You’ll need to use the highest resolution version of the simulation (VHighRes)**

**Importance – the size of the bar is related to the strength of the bar and therefore sets the impact of the bar on the dynamics of the disk. You should chat about this with Himansh**