Grading Rubric : ASTR400B Research Assignment 2

Name: [Snyder,Catherine L](https://github.com/CatherieS/Astronomy-400B)

**A Introduction 9/ 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. 1/2

**B. The Proposal 8 / 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. 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? 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: you need to write your own figure caption for fig 1. -2: need more clarity on how you actually plan to analyze the halo shape. You can try fitting ellipses to the MW and M31 particles in the remnant separately and see which ones contribute more to the triaxiality. -5: late penalty.**

**To determine the shape of the dark matter distribution you will need to examine the shape in multiple projections (XY, YZ, XZ). You can then define the shape by:**

1. **Using contour codes from Lab 7 on the 2D histogram distribution of the dark matter in the 3 different projections. Then fitting ellipses to the contours.**
2. **You can use the python library photutils to fit ellipses to the dark matter distribution in the 3 different projections. This tool will provide the ellipse properties (like semi-major axis etc). Chat with Himansh about how to use this tool**

**You need to decide at what radii you are going to determine the shape of the halo and justify why you picked that radius. You could repeat the steps above at different radii.**

**Do the above for all the dark matter particles together (MW+M31), then repeat for just the MW particles and then just the M31 particles to see if you get different answers.**