Grading Rubric : Research Assignment 7 FINAL REPORT

Name: [Butler,Ella J](https://github.com/ellab916/400B--EllaB)

1. **Miscellany (4.5/5)** 
   1. The report must be written in LaTeX using the emulateApJ or MNRAS formatting. ( 1/1)
   2. Informative Title, Name (1/1)
   3. Proper Grammar ( 0.5/1)

paragraph structure requirements is not followed

* 1. All references properly cited ( 1/1)
  2. Acknowledgements with code citations (1/1)

1. **Abstract ( 5/5)**

(a) A sentence that defines the Broad Galaxy Evolution topic 1/1  
(b) A sentence that says why the Galaxy Evolution topic is important 1/1

(c) A sentence that introduces the simulations 0.5/0.5

(c) A sentence that says what specific simulation question you are exploring 0.5/0.5

(e) A sentence(s) that states what you found 1/1  
(f) A conclusion about importance of finding(s) for the Galaxy Evolution Topic 1/1

1. **Keywords (6/10)**
   1. 5 keywords listed and defined in the text (2 per word)

major mergers, stellar disks not defined

1. **Introduction (7 / 10)**
   1. Define the Proposed Topic in Galaxy Evolution (par 1) 1/1
   2. State why this topic matters to our understanding of galaxy evolution 1/1
   3. Define “Galaxy” according to (cite) Willman & Strader and “Galaxy Evolution” 0.5/1
   4. Overview our current understanding of the topic (par 3) 2/2
   5. What are the open questions in the field? With citations (par 4) 0/2

none listed, seems to be some confusion about test-particle methods - identikit selects disks with no initial dispersion, but that’s an issue of this specific method, not an open question to the field.

* 1. Cite at least 3 journal papers (not including willman & strader). Use BibTex for formatting citations 1/1
  2. Include at least one figure from those papers to motivate your work – the figured must be discussed in the text. Caption must have citation, not plagiarized + punchline (what is the takeaway message) 1/2

caption does not explain the figures (e.g. the panels, the particles, simulation details). figure is not references in the main text.

1. **Section 2: This Project: ( 2/5)**

(a) State what question(s) you are exploring (Paragraph 1) 1/1

(b) Which of the open questions does this project address? (Paragraph 2) 0/1

misunderstanding about where the dispersion difference comes from and how impacted by the merger. This isn’t a big picture question.

(b) Why is the open question interesting/important? How will your study address the question? (Paragraph 3) 1/3

this is an N-body sim, not test-particle data

The reason the sim is different is that it starts with a disk with initial dispersion (vs. identikit) AND it isn’t a test-particle simulation, so the stars in the tidal tails experience self-gravity

1. **Section 3: Methods ( 6.5/10)** 
   1. Paragraph 1: describes the simulation you are using and what code was used to create it (citations) 0.5/1

Nbody sim uses Hernquist Halos, not NFW.

* 1. Defined N-body 1 /1
  2. Paragraph 2 : Overview approach. 1/2
  3. Include a figure to describe methods with caption 1/2
  4. Paragraph 3: Describe calculations with terms defined 1.5/2
  5. Paragraph 4: Describe the plots you need 0.5/1
  6. Paragraph 5: Hypothesis   1/1

The plot you are making is not a phase diagram and it doesn’t tell you anything about the kinematics - theta vs radius is a way to pick out spiral structures, but it is ok to use this to identify particles at large radii.

Missing equations for the cylindrical coordinates

Not clear how tidal tails are selected. More details needed for what the code does. In code - not clear why limits are imposed on theta a priori. it is not clear what radius limit is chosen and *why.*

Figure is not discussed in the text . The caption suggests that a spiral arm is tidal debris . Snapshot number is not indicated, but if snap 0 like in lab - this is a stable disk with no interaction.

1. **CODE: (10/10)**
   1. Code header that explains the goal 2/2
   2. Code is documented 2/2
   3. Significant work done in extension of code from class work. 4/4
   4. Code Github Repository is well organized and Code for Final Project is well documented. 2/2
   5. Code check-ins attended **if 2/3 are not attended/rescheduled this entire section is graded as 0.**
2. **Section 4: Results ( 19/20)**
3. Paragraph 1: Describes Plot 1 4/4
4. Plot 1 included with caption + punchline 4/4
5. Paragraph 2: Describes Plot 2 4/4
6. Plot 2 included with caption, independent code+ punchline and quantitative 7/8

not sufficiently quantitative - the difference between MW and M31 is described qualitatively. Instead a difference plot should have been made (sigma MW - sigma M31)

1. **Section 5: Discussion (15/15)**
2. Par 1: Result 1.
   1. Does the result agree or disagree with hypothesis? 3/3
3. Par 2:
   1. How does this result relate to existing work ? 5/5
   2. What is the importance/meaning of this result for our understanding of galaxy evolution? 4/4
   3. What are the uncertainties 3/3
4. Repeat for subsequent results
5. **Section 6: Conclusion ( 10/10)**
   1. Paragraph 1, Summarize 1-4 in abstract 2/2
   2. Paragraph 2: highlight one key finding, what it means and whether it agrees/disagrees with hypothesis 2/2
   3. Last Paragraph: Future directions, how could you improve the analysis/code? 6/6

11. Total 85/100