

FRONTIERS IN ASTRONOMY — AST 25

Class Presentation

One of the best ways to learn something is to teach it. In this spirit, you will present upon a topic plucked from this class. Perhaps you will explore a class topic in greater depth, or bring up additional details, or simply focus on different aspects. Alternately, you may discuss a topic that you feel we should have covered but did not. The “hot topics” listed at the end of each lecture is a great place to look; reviewing recent issues of Sky and Telescope magazine or web site are other great resources for ideas.

Your presentation—requirements

You will have six minutes to present; no more than two minutes of this time can be videos (YouTube, etc.). You can lecture from notes, use the whiteboard, or PowerPoint.

After your presentation, you will field questions from the class, for up to two additional minutes (or longer, if class time permits).

Your presentation—advice

You may be surprised by how little material you can cover in a scanty six-minute presentation. Practice several times in front of a wall and time yourself. I will give you a one-minute warning, but I will heartlessly silence you at the six minute point. Budgeting time is the main challenge for speakers.

If you are asked a question during your presentation that you cannot answer, do not panic. Give it your best shot, but be candid and admit you are just guessing. As the resident expert, your best guess is better than an “I don’t know.”

Scheduling your presentation

The class presentations will be given during the latter part of the semester, as noted on the *General Schedule of Activities*. You must give me a written summary (30-50 words long) describing your selected topic, by the date noted in class.

If you use PowerPoint, it is your responsibility to get your presentation to me *before* the class on the day you present. Do NOT wait until classtime on the day of your presentation to give me your necessary files. If you use any animation or plugins, you should bring your presentation to my office, with enough time to test it and look for solutions to any problems. It is terrible to discover that your slides do not work *during* your presentation, and I will not postpone presentations because you procrastinated on this issue.

Grading

This presentation is worth 20 points (i.e., 6.67% of your class grade). You will be evaluated by your classmates, based upon the quality and clarity of your presentation. However, I will determine your class score for the presentation. You will also receive class credit (up to 10 points, 3.33% of your class grade) for your evaluation of your classmates: evaluate all of your classmates for the full 10 points.

The score I will assess will consist of the following: Time usage, knowledge of topic, logical flow of presentation, supporting imagery (2 images required), summary and vocabulary page, Q and A period, speaker engagement. Deficiencies in each section can result in as much as 4 points penalty per section.

Astro 25
Supersymmetry—a summary
Wilbur Waitley

The standard model of particle physics has been very successful, but has shortcomings. Supersymmetry hopes to address these, by proposing that the fundamental particles of the universe and the fundamental forces are linked. For each fundamental fermionic particle (such as electrons), there would be a bosonic partner (i.e., selectron). I'm going to talk about the strengths and weaknesses of this idea, and what would be required to test it.

Terminology

Sparticle—a supersymmetric bosonic partner to a fermionic particle.

Gravitino—a supersymmetric fermionic partner to the bosonic graviton. This could be a candidate for dark matter.

References

- T. Moroi, H. Murayama Cosmological constraints on the light stable gravitino, Phys.Lett.B303:289–294,1993
- A. de Gouvea, T. Moroi, H. Murayama Cosmology of Supersymmetric Models with Low-energy Gauge Mediation, Phys. Rev. D 56:1281–1299,1997

Astronomy 25 Class Presentation proposal

Rank date preference (1=favorite, through 6=least favorite)

23 Apr: _____

25 Apr: _____

30 Apr: _____

2 May: _____

7 May: _____

14 May: _____

Restrictions:

Presentations cannot be presented on topics already treated in detail in the class. This list of taboo topics consists of:

String Theory (including M-theory, superstring theory)

Black holes

Wormholes / Alcubierre Drive

Dark energy

Time

Example #1:

I want to discuss quark/strange stars in greater detail than it was treated in class. These strange objects are not part of mainstream astronomy, but I think that they have the potential for being discovered. I will describe what we know about them, and if they could be detected.

Example #2:

We didn't talk at all about Mach's principle in class. This is an important theoretical and philosophical topic that influenced Einstein's development in relativity. I will describe what the principle is, and how it affected cosmology.

Example #3:

Chandrasekhar developed the concept of the white dwarf mass limit. However, when he presented this result to his intellectual mentor—Sir. Arthur Eddington—he was completely ambushed by Eddington in subsequent academic and professional meetings. I want to describe some of these astonishing events in the history of science.

Presentation Checklist

Presentation ready (4-6 minutes, fully rehearsed at least once)

At least two images selected, for screen display, or copies made for all students

If any of the above are electronic, get them to Prof. Rice BEFORE classtime. Note that ppts often do not email successfully. Also note that the projector screens are 1024x768—if you have a wide screen monitor, format your ppt accordingly.

A handout for all students, consisting of

a 1-paragraph talk summary

1-sentence definitions of at least two vocabulary terms encountered in your preparation

At least two references you consulted in your research, only one of which can be wikipedia