Problem Set 6

Due in class Wednesday March 20

Reading: Ch 7 of Ryden and “Dark Matter” from Review of Particle Physics (see link at course website)

Start working with your partner. Each student submits an outline of your in-class presentation. In your document, clearly state the division of labor within the team and who will present which part. Each student should write up your own part of the outline.

Each outline should be 2 pages long and should

1. Briefly answer these questions from your own perspective:
   Why is the topic important? What are the key questions? How are these questions being answered? What have we learned? What are the main challenges and major systematic errors (if any)? What to expect next?

2. Include a list of talking points, descriptions of some possible slides you plan to show, and any concept/information/papers you are still learning or reading.

We understand this is only the first draft, and you should continue to work on it over the next few weeks until your presentation day.

Reminder: Presentation Guidelines

The in-class presentation is a major component of the course, counting 20% towards your grade. You are expected to take this project seriously and demonstrate a significant amount of invested time and effort.

The purpose of this project is to give you a chance to investigate in some depth a current research topic in cosmology, using the knowledge you have gained in class. This activity is important because, unlike the standard physics courses (e.g. EM, quantum, stat mech), cosmology is an ongoing research field that is filled with new (and sometimes wrong) research results and opportunities. Hopefully you will get a taste of the excitement in this research area. You will also get to practice giving oral presentations, an integral part of most scientists’ research activities.

Each talk (by a pair of students) is 10 minutes long. The audience is your classmates, so pedagogy is important. All of the topics are broad and have consumed many professional astro/physicists’ lives. Use your 10 minutes as if you were a professor recruiting your classmates to work on your topic.

Keep in mind you have little time to derive equations in such short talks. Focus instead on observations/experiments and phenomenology and spend no more than one slide summarizing any relevant theory/equations (if any).