PGF5299: Physical Cosmology II

Final Project

For the Final Project, you will perform a **numerical** calculation and write a **paper** about a topic in Cosmology, listed below. You will also make a 30 minute slide presentation about your paper. The paper and the presentation will each comprise 50% of your Final Project grade, which in turn represents 50% of your total grade. It is highly recommended that you start working on your Final Project as soon as possible (not later than the middle of the semester), so that you have time to do a good job at the end.

Rules:

1) Your paper must be written in LaTeX.

2) Your paper **must** include numerical calculations and figures made by yourself related to your project (e.g. you make a χ^2 minimization or MCMC analysis, or you implement a numerical calculation of the number of clusters in a galaxy survey, and make plots showing results, etc). *Failure to do so will decrease your grade considerably.*

3) Your paper should preferentially be written in English, in which case you will get up to 0.5 extra point.

4) Your presentation must be in electronic format (e.g. PowerPoint, Keynote, etc.)

5) Your presentation should preferentially be written and spoken in English, in which case you will get up to 0.5 extra point, depending on your proficiency.

You **must** choose one of the topics below. If you would like to work on something else, talk to me first so we can discuss about something that is appropriate for the course.

Topics:

Cosmological from CMB Observations (e.g. WMAP, Planck).

Cosmology from Correlations (Cross-correlations) and Power Spectra (Cross-spectra);

Cosmology from Gravitational Lensing;

Cosmology from Galaxy Clusters;

Non-linear Perturbation Theory in Correlations and Power Spectra;

Halo Finders and/or Cluster Finders and/or Void Finders;

Halo Model in Cosmology;

N-Body Simulations in Cosmology;

Photometric Redshift Methods and Applications;

MCMC Parameter Estimation in Astrophysics and Cosmology;

Constraining Models of Cosmic Acceleration from Observations.