

Seminar (ASTRO 589)

Fall 2019

Problem Set 3

Due on 4 November 2019

Homework is the central part of this course. You are encouraged to collaborate with fellow students and/or to consult senior students, local postdocs and me. But, **please write the cod/solution by yourself**. Homework is strictly due by the beginning of the class on 4 November, and **no late homework will be accepted**.

1. In class, we have a series of group presentations about dark-energy probes. Please summarize them in a technical report. The minimum length is five pages.

Instruction:

- Write a document by using the AAST \TeX with following document class:
`\documentclass[twocolumn]{aastex63}`
- Start from a proper introduction for the dark energy and its astronomical probes (history, motivation, status, prospectives, etc.).
- In the main part, summarize (A) principle of dark energy measurement from this method (B) ongoing effort, current status (C) known systematics (D) unknown systematics for each of following probes: Galaxy Redshift Surveys, Weak gravitational lensing, Type-Ia supernovae, galaxy cluster, strong gravitational lensing time delay, Gravitational waves, cosmic microwave background radiation including Integrated Sachs-Wolfe effect.
- In the conclusion section, write your own judgment for the current and future generation dark energy probes. In your opinion, which probe(s) should we, as a community, prioritize, and why?