Astronomical Techniques

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SYLLABUS

Introduction

- Channels of astronomical information: electromagnetic waves, cosmic rays, neutrinos, gravitational waves.
- Characteristics of the various channels of information and methods of detection.
- From observations to astrophysical discoveries: recurrent patterns. Ex.: Radio Astronomy, X-Ray Astronomy
- Effects and limitations of the earth atmosphere.
- Various types of detectors of e.m. waves.
- Imaging.
- Planning the observations: estimate of the expected SNR
- E.g.: photometric observations with CCD detectors.
- Spectroscopy: principles and types of spectrographs.

Evaluation

- Given a scientific idea (ex. discover primordial galaxies), propose an observation (ex. take spectra), discuss the observational strategy (why that telescope, instrument, exposure time???)
- Develop the discussion on various subjects of the course
- 3 credits – 36 h – Ph.D. Students: ask one question (each student) on the topics of the previous lecture + final discussion on an IGM proposal (see above)

Teaching Material

- Notes and presentations (ppt + pdf)

See web page

- Articles
- C.R. Kitchin, *Astrophysical Techniques*, sixth Edition

Details

- Timing (< 5min notice)
- Location