

Master Physique fondamentale et applications

Instrumentation for astronomy

Informations

Composante : Faculté des Sciences

Responsible

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Langue(s) d'enseignement

Anglais

Contenu

Chapter 1. Observing the universe. Links with instrumentations

- 1.1 Observing the universe at different wavelengths
- 1.2 Parasitic sources of light emission
- 1.3 Other sources of light emission
- 1.4 Neutrinos
- 1.5 Gravitational waves
- 1.6 Observatories of the 21st century

Chapter 2. Telescopes

- 2.1 Basics on telescopes
- 2.2 UVOIR (UV-Optical-IR) telescopes
- 2.3 High angular resolution
- 2.4 Radio telescopes
- 2.5 Observing from space
- 2.6 X and γ -rays astronomy

Chapter 3. Light dispersers

- 3.1 Prisms
- 3.2 Gratings and Grisms
- 3.3 Fabry-Perot interferometers, tunable filters
- 3.4 Michelson interferometers, FFT

Chapter 4. Detectors

- 4.1 The observer's problem
- 4.2 Flux Measurements and noises
- 4.3 Charge Coupled Devices (CCD)
- 4.4 Alternative detectors

Chapter 5. Introduction to spectroscopes

- 5.1 Introduction to astrophysical instrumentation
- 5.2 Spectroscopy: basic Layouts
- 5.3 Introduction to spectroscopes and data cubes
- 5.4 Quick spectroscopy history
- 5.5 Spectrographs and spectrometers

Chapter 6. Spectrographs

- 6.1 Introduction
- 6.2 Elementary ray optics
- 6.3 Energy flow
- 6.4 Study of a spectrograph
- 6.5 Dispersers
- 6.6 Study of a spectrograph, the case of gratings
- 6.7 Application: Example of grating spectrograph
- 6.8 Instrumental design constraints

Chapter 7. Spectro-Imagers

- 7.1 Etendue Conservation
- 7.2 Multi-object spectrographs (MOS)
- 7.3 Spectro-imagers (IFU, IFS)
- 7.4 Spectro-imagers: spectrograph imagers
- 7.5 Spectro-imagers: spectrometer imagers

Modalités d'organisation

Two hours sessions of mixed courses and tutorials. Possibility to perform observations at Observatoire de Haute-Provence.

Pré-requis obligatoires

Solid background in optics

VOLUME HORAIRE

- Volume total: 26 heures

Codes Apogée

- SPFCU48J [ELP]

Pour plus d'informations

[Aller sur le site de l'offre de formation...](#)



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