Summary

Cosmology is the study of the structure and evolution of the universe as a whole. This course describes the principal themes of cosmology, as seen from the point of view of observations.

Content


2. The three observational pillars of Big Bang cosmology discovered during the 20th century: (i) The universe expansion; (ii) The cosmic microwave background at 3K; (iii) The abundance of light elements.

3. The metric of the universe. The spectral redshifts.

4. Cosmological models and the evolution of the universe.

5. Observational tests: the age of the universe, mean density and the problem of dark matter, nucleo-cosmo-chronology, the deep galaxy counts.

6. Recent observations of the cosmic microwave background and its power spectrum.

7. Impact of gravitational lenses on cosmology.

8. The initial phases of the evolution of the universe in the Big Bang model and cosmological nucleosynthesis.

Learning Prerequisites

Recommended courses

Bachelor in physics or mathematics and Astrophysics I, II and III

Learning Outcomes

By the end of the course, the student must be able to:

• Theorize the fundamental principles of cosmology

Transversal skills

• Access and evaluate appropriate sources of information.

Teaching methods
Ex cathedra and exercises supervised in classroom

Assessment methods
oral exam (100%)

Resources
Ressources en bibliothèque
• Modern Cosmology / Dodelson
• Galaxy formation / Longair