Extragalactic Astrophysics and Galaxy Formation

Master on Astrophysics, Particle Physics and Cosmology

Course Structure

- Goal: To give the present view of the structure and dynamics of galaxies as well as their formation and evolution in a cosmological context, paying especial attention to the physical mechanisms involved

- Course format: Four 60-min lectures per week. From mid-February to May.

- Two parts:
  - Extragalactic astrophysics (Dr. Josep Maria Solanes) → Galaxies: structure, dynamics, statistical properties
  - Galaxy formation and evolution (Dr. Alberto Manrique) → Structure formation, gravitational clustering, galaxy formation

Extragalactic Astrophysics

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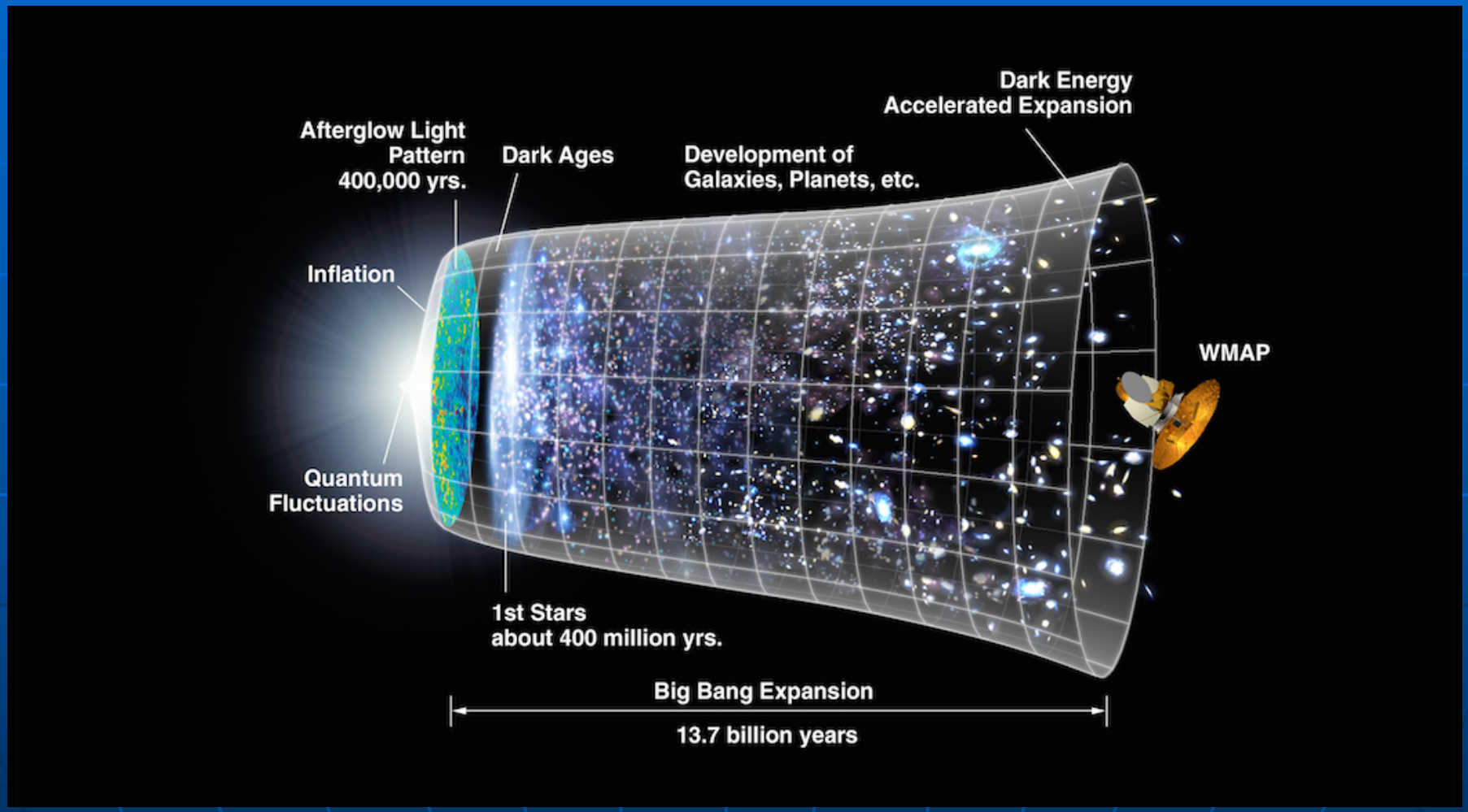
Contents: Part I

Galaxy Formation



Contents: Part II

1. STRUCTURE FORMATION IN THE UNIVERSE
2. COSMIC DENSITY PERTURBATIONS: LINEAR EVOLUTION
3. SPHERICAL COLLAPSE
4. RELAXATION MECHANISMS AND TIME SCALES
5. DARK MATTER HALOS
6. GALAXY FORMATION AND EVOLUTION
7. THE HIGH-REDSHIFT UNIVERSE

Course Grading

- It will be based 100% on a research work: 2-student groups will present a meeting-like poster with the results of the analysis of a galaxy cluster
- The poster (in English) will be presented and the results explained (in English) in an oral session at the end of the semester (mid/late June)
- The contents of the poster and the oral presentation will be evaluated according to grading sheets (similar to TFM)

Course Material

- UB *Campus* Virtual:
  - lecture notes
  - handouts
  - recommended readings (e.g. review papers on specific topics)
- Bibliography (textbooks):
  - GALAXIES IN THE UNIVERSE (2on. Ed.), Sparke & Gallagher, Cambrigge University Press (2007)
  - GALACTIC DYNAMICS (2on. Ed.), Binney & Tremaine, Princeton University Press (2008)
  - COSMOLOGY (2on. Ed.), Coles & Lucchin, John Wiley & Sons (2002)
  - GALAXY FORMATION (2on. Ed.), M.S. Longair, Springer (2008)
  - GALAXY FORMATION AND EVOLUTION, Mo, White & van den Bosch, Cambridge University Press (2010)