

Large Scale Structures Cosmology

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Durata : 5 lezioni regolari di 2 ore ciascuna + una lezione monografica più specialistica di 2 ore.

Programs:

Lecture 1: *Overview of Large Scale Structure probes of cosmology*

- Baryonic Acoustic Oscillations [BAO], Redshift Space Distortions [RSD], Weak Lensing, clusters and voids
- Current constraints

Lecture 2: *Linear theory*

- Spatial statistics
- Gaussian fields
- LCDM, phenomenology for neutrinos, Warm Dark Matter
- Zeldovich approximation and phenomenology of the cosmic web

Lecture 3: *BAO reconstruction*

- Alcock-Paczynski and RSD
- Zeldovich framework

Lecture 4: *Beyond linear theory*

- Spherical collapse
- Halos (and voids): abundances and clustering
- The Halo Model framework

Lecture 5: *Bells and whistles*

- Effective Field Theory
- Non-gaussian initial conditions
- Assembly bias

Lecture 6: *Special topics*

- Multi tracer method
- The indicator function framework for density/environment split clustering
- Cross-correlations with the Cosmic Microwave Background (thermal and kinematic Sunyaev-Zeldovich effects)