Les Houches Lectures: EFT of Large-Scale Structure Outline

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1 Introduction to LSS dynamics

- Setting the stage: observables (power spectrum, bispectrum, biased tracers) and goals (neutrino mass, primordial non-Gaussianity)

- Dynamics of LSS in Eulerian and Lagrangian formulation

2 Standard cosmological perturbation theory and statistics

- phenomenology of LSS (linear regime, non-linear perturbative regime, non-perturbative regime and virialization)

- derivation of the gravitational Kernels

- Statistics

3 Effective Field Theory Approach

- failures of standard perturbation theory

- coarse grained equations of motion and effective equations of motion (maybe dim reg)

- counterterms and divergencies/UV-sensitivities

- non-locality in time

- matching of the counterterms

4 Applications: Bias, Baryons, Redshift Space Distortions, Parameter Forecasts

- generation of non-local bias from dynamics, symmetry allowed operators

- EFT for biased tracers and redshift space distortions

- potential of EFT approaches for learning about fundamental physics from observations

References

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