

15th June 2020

1 Basic reading

Dodelson ch-7. Inhomogeneities : reproduce the plot in figure 7.11 using the BBKS transfer function - read the whole chapter and reproduce other plots.

2 Advanced reading

Read the introduction of <https://arxiv.org/pdf/1706.09906.pdf> and summarize it.

3 Try N-body sims

Do a particle mesh code following the tutorial by Andrey Kravstov <https://astro.uchicago.edu/~andrey/Talks/PM/pm.pdf>

22nd June 2020

- Do σ_8 normalisation of BBKS power spectrum and generate gaussian random field with that power spectrum.
- Visualise the generated gaussian random field in physical space and compare with the power law one.
- Read more about halo bias.

Large Scale Structure notes

Inhomogeneous evolution can't be done completely analytically, even though it can be simulated. Analytical tools/models are important to gain deeper understanding. Simulations help in making, testing and refining these analytical tools along with the observations.

1 FLRW background evolution

2 Newtonian equations for inhomogeneous CDM

3 Growth of Structure

3a Linear solutions to inhomogeneous CDM

3b Eulerian - 2nd order perturbation theory

3c Lagrangian approach - Zel'dovich approximations

3d Spherical collapse

- Lagrangian approx

Halo assembly bias