

Advanced Topics in LSS – **Marko Simonović** (CERN, Switzerland)

- 1) Dark matter nonlinearities. Why EFT? Solutions to the nonlinear equations of motion. Eulerian and Lagrangian approach. Simple examples, scalings, etc.
- 2) Examples of basic statistics. One-loop power spectrum, tree-level and one-loop bispectrum. Fast methods to evaluate loop integrals. Examples.
- 3) Biasing and RSD in perturbative approach. Going beyond linear bias and Kaiser formula. One-loop power spectrum for biased tracers in redshift space.
- 4) Physics of the BAO peak. IR-resummation. Robustness of the wiggles in the power spectrum. BAO peak analysis in momentum space.
- 5) More modern and speculative ideas: BAO and full initial condition reconstruction, field-level methods, full likelihood for the linear Fourier modes, future directions.