

Institut Ruđer Bošković  
ZAVOD ZA TEORIJSKU FIZIKU  
Bijenička c. 54  
ZAGREB, HRVATSKA

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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU  
(Zajednički seminari Zavoda za teorijsku fiziku,  
Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

## Biased Tracers in the Effective Field Theory of Large Scale Structures

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Vrijeme : **14:00 sati c.t.**  
Mjesto: IRB, dvorana I krilo

### Abstract:

Understanding dark matter inhomogeneities and the corresponding tracers, like galaxies, on large cosmological scales can nowadays safely be considered as one of the pillars of the standard cosmological model. Detailed understanding of these inhomogeneities is crucial for interpretation of observational data from numerous current and future surveys. Newly developed framework of Effective Field Theory of Large Scale Structures offers a consistent way of calculating the observables in the weakly non-linear regime. In this framework long wavelength fluctuations are described by integrating out the short distance modes and adding appropriate operators that take care of the effects that short distance fluctuations impose on long distances. We use this framework to focus on the description of collapsed objects and biased tracers of dark matter. The overdensity of these objects at a certain position and given time is determined by the initial tidal tensor, velocity gradients and spatial derivatives of the regions of dark matter that, throughout the evolution of the universe, ended up at that given location. We present the results for the galaxy observables, i.e. their two and three-point autocorrelation functions, at one-loop and three-level respectively.

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