density and the normalization parameters.

[구 CO-04] HectoMAP and Horizon Run 4: Over- and Under-dense Large-scale Structures in the Real and Simulated Universe

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HectoMAP is a dense redshift survey of red galaxies covering a 53 square degree strip of the northern sky, and Horizon Run 4 is one of the densest and largest cosmological simulations based on the standard Lambda cold dark matter model. We use HectoMAP and Horizon Run 4 to compare the physical properties of observed large-scale structures with simulated ones in the redshift range $0.22<z<0.58$. We find that the properties of the largest over- and under-dense structures in HectoMAP are well within the distributions for the largest structures drawn from 300 Horizon Run 4 mock surveys. Overall the size, richness and volume distributions of observed large-scale structures when the universe is ~9.4 Gyrs old are remarkably consistent with predictions of the standard Lambda cold dark matter model.

[구 CO-05] Lyman alpha radiative transfer at the epoch of cosmic reionization

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We present a numerical code for the random scattering histories of Lyman alpha photons in the intergalactic medium. The numerical code calculates the radiative transfer under generic three dimensional density, ionization fraction, and peculiar velocity fields based on N-body + radiation transfer simulations of the epoch of reionization. The code is tested with models having analytical solutions, which have idealized geometry and simplified velocity fields. The emergent line profiles can give constraints to the ionization structure around Lyman alpha sources in the early universe.

[구 CO-06] Lagrangian Perturbation Theory for the Cosmological Structure Formation with 2-component Fluid

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We present the preliminary result of our Lagrangian perturbation theory for the large-scale structure formation, in the presence of the cold dark matter (CDM) and the baryonic fluid. In the linear order, two mutually independent pseudo-particles can describe the evolution of density fluctuations and the accuracy of the calculation is better than the 4-mode (growing, decaying, streaming, compensated) Eulerian linear perturbation theory. In the 2^{nd} order, the separability of pseudo-particles is not as straightforward as in the linear order, and the related difficulty in developing the 2^{nd} order theory will also be presented.

[구 CO-07] Marked correlation function as modified gravity probe

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For modified gravity models with screening mechanisms, the signal of modified gravity is larger at low density areas. We could add a density weighted mark to galaxy correlation function and increase the signal to noise of modified gravity detection. Based on mock galaxy catalogs from modified gravity simulations, we try different mark functions and parameters to find the best choices for discriminating modified gravity from GR. In this talk I will present our marked correlation funciton results and discuss its advantages and disadvantages.

[구 CO-08] Evidence for galaxy dynamics tracing background cosmology below the de Sitter scale of acceleration

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