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[구 PSMC-04] Forecasting special events driving the assembly of dark halos

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I will compute the rate of merger events in the multi-scale initial conditions to forecast special events driving the anisotropic assembly of dark matter halos and understand their impact on galaxy formation. Beyond halo mergers, I consider all sets of mergers, including wall and filament mergers, as they impact the geometry of galactic infall. Their one- and two-points statistics are computed as a function of cosmic time. I establish the relation between merger rates and connectivity, which is then used to assess the impact the large scale structures on assembly bias. The anisotropy of the cosmic web, as encoded in this theory, is a significant ingredient to describe jointly the physics and dynamics of galaxies in their environment, e.g. in the context of intrinsic alignments or morphological diversity.

[구 PSMC-05] Transitional Dark Energy - A solution to the H_0 tension

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In this talk, I will explain the implications of a rapid appearance of dark energy between the redshifts (z) of one and two on the expansion rate and growth of perturbations. Using both Gaussian process regression and a parametric model, I show that this is the preferred solution to the current set of low-redshift ($z < 3$) distance measurements if $H_0 = 73 \sim 74 \text{ km s}^{-1} \text{ Mpc}^{-1}$ to within 1% and the high-redshift expansion history is unchanged from the Λ CDM inference by the Planck satellite. Dark energy was effectively non-existent around $z=2$, but its density is close to the Λ CDM model value today, with an equation of state greater than -1 at $z < 0.5$. If sources of clustering other than matter are negligible, we show that this expansion history leads to slower growth of perturbations at $z < 1$, compared to Λ CDM, that is measurable by upcoming surveys and can alleviate the σ_8 tension between the Planck CMB temperature and low-redshift probes of the large-scale structure.

[구 PSMC-06] Cosmology with large-area extra-galactic radio surveys from SKA and pathfinders

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The last two decades have seen an immense growth in our understanding of the physics of the birth and evolution of our Universe. However there are still many unanswered questions, such as: what is the nature of the dark energy, which drives the acceleration of the expansion of the Universe? Is the acceleration driven by a cosmological constant, some dynamical dark energy, or a modification of the gravitational force law on large scales? The next generation of radio observatories will conduct large area radio continuum and HI intensity mapping surveys, and so will make possible new and complimentary tests of these fundamental questions. In this talk I present the design of these next generation of surveys, current forecasts for the effectiveness of these cosmological probes, and results from precursor experiments.

특별세션 소형망원경 네트워크

[구 STN-01] Korean Small Telescope Network (소형망원경 네트워크)

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In this talk, we will give an overview of the small telescope network project in Korea. The small telescope network is a project in planning that would gather 0.4m-1.0m telescopes in Korea together for a common use in research and education, and the project is being led by the Optical/IR Astronomy Division of KAS. Even in the era of giant telescopes, small telescopes are still competitive for various research topics that require rapid response or long-term, steady monitoring. There are quite a few small telescopes in Korea, but the research use of these telescope has been very limited. By organizing these