there is a possibility of increasing the likelihood of catching the early light curves of SNe among galaxies in the vicinity of the main targets. To test the feasibility of the expansion of the sample galaxies, we examine how much the probability of catching SNe increases by adjusting the field of view of the RASA36 telescope which is one of the IMSNG facilities with a large field of view of 6.25 deg2. We calculate supernova rates (SNRs) of galaxies within the FoV that contains main IMSNG galaxies from the stellar mass and star formation rate of the galaxies. Based on the SNRs of these galaxies, we find the best pointing of the telescope towards the highest SNR region. As a result, we present improved total SNR, with respect to the ordinary pointing on average where the IMSNG main target is placed at the center of FoV. The actual observation should be followed to test the effect of this strategy.

[포 GC-14] Merging histories of Galaxies in Deep and Wide Images of 7 Abell Clusters with Various Dynamical States

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Galaxy mergers are known to have been one of the main drivers in galaxy evolution in a wide range of environments. However, in galaxy clusters, high-speed encounters have been believed to undermine the role of mergers as a driver in galaxy evolution. Nonetheless, a high fraction (~38% in Sheen et al. 2012 and ~20% in Oh et al. 2018) of galaxies with post-merging features have been reported in deep (>~28 mag/arcsec2) optical surveys of cluster galaxies. The authors argue that these galaxies could have merged outside of the cluster and, later, fallen into the cluster, sustaining their long-lasting post-merging features. On the other hand, when galaxy clusters interact, galaxy orbits might be destabilized resulting in a higher galaxy merger rate. To test this idea, we measure the ongoing-merger fraction of galaxies in deep DECam mosaic data of seven Abell clusters (A754, A2399, A2670, A3558, A3574, A3659 and A3716) with a variety of dynamical states (0.016<z<0.091) for comparison with the ongoing-merger fraction (~4%) from virialized clusters in the literature. We also publish our photometric catalogues of DECam mosaics centered on these clusters in u, g, and r-band.

우주론/암흑물질,암흑에너지

[포 CD-01] Probing the Early Phase of Reionization through LiteBIRD

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Cosmic reionization imprints its history on the sky map of the cosmic microwave background (CMB) polarization. Even though mild, the signature of the reionization history during its early phase (z>15) can also impact the CMB polarization. We forecast the observational capability of the LiteBIRD(Lite(Light) satellite for the studies of B-mode polarization and Inflation from cosmic background Radiation Detection), a truly cosmic-variance limited apparatus. We focus on the capability for such an apparatus to probe the partial optical depth of the CMB photons during z>15. We show that LiteBIRD is able to probe this quantity with a modest to high significance, enabling one to tell how efficient the cosmic reionization and star formation were at z>15.

[포 CD-02] Detecting the Baryon Acoustic Oscillations in the N-point Spatial Statistics of SDSS Galaxies

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Baryon Acoustic Oscillations (BAO) are caused by acoustic density waves in the early universe and act as a standard ruler in the clustering pattern of galaxies in the late Universe. Measuring the BAO feature in the 2-point correlation function of a sample of galaxies allows us to estimate cosmological distances to the galaxies mean redshift, <z>, which is important for testing and constraining the cosmology model. The BAO feature is also expected to appear in the higher order statistics. In this work we measure the generalized spatial N-point point correlation functions up to 4th order.

We made measurements of the 2, 3, and 4-point correlation functions in the SDSS-III DR12 CMASS data, comprising of 777,202 galaxies. The errors