

포스터 발표 초록

외부 은하/은하단

[포 GC-01] Feedback-regulated star formation and escape of LyC photons from mini-haloes during reionization

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Reionisation in the early Universe is likely driven by dwarf galaxies. Using cosmological RHD simulations, we study star formation and the escape of Lyman continuum (LyC) photons from mini-haloes with $M_{\text{halo}} < 10^8 M_{\text{sun}}$. We find that feedback reduces star formation very efficiently in mini-haloes, resulting in the stellar mass consistent with the empirical stellar mass-to-halo mass relation derived in the local Universe. Because star formation is stochastic and dominated by a few gas clumps, the escape fraction in mini-haloes is generally determined by photo-ionization, rather than supernova explosions. We find that the photon number-weighted mean escape fraction in mini-haloes is higher (20-40%) than that in atomic-cooling haloes. Despite their high escape fractions, LyC photons from mini-haloes are of minor importance for reionization due to inefficient star formation. We confirm previous claims that stars in atomic-cooling haloes with masses $10^8 M_{\text{sun}} < M_{\text{halo}} < 10^{11} M_{\text{sun}}$ are likely to be the most important source of reionization.

[포 GC-02] The KVN single-dish survey of the MALATANG galaxies

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We present the preliminary result from our KVN single-dish observations of the MALATANG sample. The MALATANG (Mapping the dense molecular gas in the strongest star-forming Galaxies) is one of

the JCMT legacy surveys on the nearest 23 IR-brightest galaxies beyond the Local Group. The goal of the MALATANG survey is to map the sample in the dense gas tracers (HCN and HCO+ J=4-3), and probe the relationships between the dense molecular gas and star formation activities. As a complementary study, we recently launched a KVN/KaVA program on the same sample, in order to measure their flux densities and parsec-scale jet/outflows in the millimeter regime, which will be greatly useful in understanding the initial conditions of the feedback process. In this work, we present the preliminary result from our pilot KVN single-dish program on a sub-sample, which will be used to select the future VLBI imaging study under plan. We investigate the KVN spectral energy distributions (SED) of the sample as a function of the power source of the luminous IR brightness of each target (starburst? AGN? or hybrid?). We also discuss the technical challenges that we experienced during our KVN observations due to the large size of the sample in the sky.

[포 GC-03] UGC 4703 Interacting Pair Near the Isolated Spiral Galaxy NGC 2718: A Milky Way Magellanic Cloud Analog

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We report a LMC-SMC-MW analog in an isolated spiral galaxy NGC 2718. Located at a sky-projected distance of 81 kpc from NGC 2718, we find that UGC 4703 is clearly interacting with its nearby lower-mass companion UGC 4703B, forming a bridge of stellar stream between them. Total B-band luminosity of UGC 4703 and its companion is -17.75 and -16.25 mag, respectively. The H I image revealed evidence of interaction between the dwarf galaxy pair but no extended emission, such as the Magellanic Stream. We also detected star-forming regions along the UGC 4703/4703B bridge with stellar mass exceeding $10^7 M_{\odot}$. While comparing the optical and H I morphology of the interacting dwarf pairs (UGC 4703-4703B and LMC-SMC), we discuss possible differences in interaction histories of these systems.

[포 GC-04] A study AGN activity on environmental dependence in the SDSS late-type galaxies

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We explore the role of various environments in triggering star formation (SF) and narrow-line active galactic nucleus (AGN) in SDSS spiral galaxies and the SF-AGN connection, using a volume-limited sample with $M_r < -19.5$ and $0.02 < z < 0.055$ selected from the SDSS Release 7. To avoid the dependency of AGN activity on bulge mass, the central velocity dispersion of the sample galaxies is limited to have a narrow range of $130 \leq \sigma \leq 200 \text{ km s}^{-1}$. We note that in gas sufficient galaxies, AGN feeding lags behind starburst, whereas as the gas exhausts, the SF slows down and AGN seems to even prevent the SF, and thus divide the high- σ sample into two subsamples according to their cold gas content at central region traced by fiber star formation rate, SFR_{fib} . We find that a high density (cluster) environment causes a significant increase in AGN activity as well as gas depletion in host galaxies. However, the finding is only noticeable in the high- σ and low SFR_{fib} sample. It seems that a galaxy interaction with the nearest neighbor directly affects the SF of the central region. However, it is unclear whether it directly affects AGN activity.

[포GC-05] Properties of BzK Galaxies Selected in DLS F1 Field

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The redshift range $1.4 \lesssim z \lesssim 2.5$ is often called the 'redshift desert' because of the difficulties in measuring spectroscopic redshifts due to the shifting of the major spectroscopic features into near-infrared wavelength (Steidel et al. 2004). One of the most efficient and fast way to select galaxies at this redshift range is the BzK technique designed by Daddi et al. (2004). Combining deep BVRz data from Deep Lens Survey with the wide-field ($\sim 4.08 \text{ deg}^2$) K-band image, we select 1200 star-forming BzKs (sBzKs) and 120 passive BzKs (pBzKs) at $K < 21.25$. We discuss about the photometric redshifts, star formation rates, and stellar mass of the selected BzKs. Possible large scale structure at $1.4 \lesssim z < 1.6$ based on the spatial distribution of the BzKs is also introduced.

[포GC-06] Abell 2261: a fossil galaxy cluster in a transition phase

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Fossil groups of galaxies have characteristic features of a dominant central elliptical galaxy ($\Delta M_{12} > 2$ in $0.5 R_{\text{vir}}$) embedded in highly relaxed X-ray halo, which indicates dynamically stable and evolved systems. These are thought as a final stage of the evolution of galaxy groups in the hierarchical structure formation scenario. However, the formation and evolution of fossil clusters are still unclear due to lack of detailed studies. Therefore, we perform a kinematic research of a known fossil cluster Abell 2261 (A2261 hereafter) using spectroscopic data of 589 galaxies in the A2261 field. Even though A2261 is known as a fossil cluster, previous studies found several unusual features such as quite high X-ray entropy for a stable cluster, and an elongated shape, which are not expected in standard fossil clusters. Using the caustic method, we identify cluster member galaxies and discover a second bright galaxy ($\Delta M_{12} = 1.68$) at $\sim 1.5 R_{\text{vir}}$. The presence of such a bright galaxy can break the current fossil state of cluster in the near future. In addition, with two independent substructure finding methods, we confirm that the previously detected elongated galaxy distribution of the cluster is a real feature. These findings indicate that A2261 is not in a fully stable state, unlike the existing fossil definition diagnostic. We require a more stringent criterion for the fossil definition to represent a genuinely final stage of cluster evolution.

[포GC-07] Analysis of SN 2014J Early Phase Spectra

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We present the results of high resolution spectral analysis for Type Ia supernova SN 2014J in M82, which was discovered on 21 January 2014 UT. We performed spectroscopic observations for SN 2014J in its early phase at Bohyunsan Optical Astronomy Observatory with the high resolution echelle spectrograph BOES attached to 1.8-m reflector. Spectra of 26 epochs in 6 nights were obtained from 22 January 2014 to 23 February 2014 UT. Spectral feature variations for several