magnetic field morphology traced by polarization segments is interpreted as to help gas flow along the filamentary structrue. Our observations shows that filaments in Mon R2 have spiral structure and the magnetic field lines are parallel to the filaments. We interpret that the spiral structure can be formed by a rotation hub-filament system with gas flowing along the filaments to the hub. We found several dust clumps at the central part of the hub region of the Mon R2. They seems to be formed at locations where spiral field lines meet each other. These results show one observational example that a magnetic field play a role in gas flow.

## 외부은하/은하단

### [포 GC-01] Studies of AGN Variability from SNU AGN Monitoring Project (SAMP)

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We present optical variability of nearby luminous active galactic nucleus (AGN). We use the multi-epoch data of 46 AGNs obtained from 2015 to 2019 through SNU AGN Monitoring Project (SAMP), which was carried out for the reverberation mapping of luminous AGNs. We estimated variability amplitudes and time scales using the various types of analytic function, such as structure function and damped random work. We present the comparisons between physical properties of AGNs and optical variability in order to unveil the origin of the variability of AGNs

### [포 GC-02] Stellar photometric Properties in the outskirt of NGC 5236

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In the hierarchical framework, galaxies grow through mergers and accretion. Those mechanisms leave faint features, such as stellar streams, shells and smooth stellar halos in the outskirts of galaxies. In order to search for those features in the nearby galaxies, we are conducting a KMTNet Nearby Galaxy Survey using the Korea Microlensing Telescope Network. We present a deep and wide-field imaging of NGC 5236, a barred spiral galaxy. In one-dimensional surface brightness profiles, we reach 28, 29 mag/arcsec2 in the R- and B-band, respectively. We find that the outer disk of NGC 5236 can be well described with a single exponential profile up to 17 kpc (~3.8 Reff) indicating that the excess light due to the stellar halo is not clearly detected. B-R color gradually increases towards the outskirts of the galaxy. It may reveal that stellar properties in the outskirts are marginally distinctive from those in the central part.

### [포 GC-03] Mass models of the Large Magellanic Cloud: HI gas kinematics

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We perform disk-halo decomposition of the Large Magellanic Cloud (LMC) using a novel HI velocity field extraction method, aimed at better deriving its HI kinematics and thus the dark matter density profile. For this, we use two newly developed galaxy kinematic analysis tools, BAYGAUD and 2DBAT which have been used for the kinematic analysis of resolved galaxies from Australian Square Kilometre Array (ASKAP) observations like WALLABY which is an all-sky HI galaxy survey in southern sky. By applying BAYGAUD to the combined HI data cube of the LMC taken with the Australia Telescope Compact Array (ATCA) and Parkes radio telescopes, we decompose all the line-of-sight velocity profiles into an optimal number of Gaussian components based on Bayesian MCMC techniques. From this, we disentangle turbulent non-circular gas motions from the overall rotation of the galaxy. We then derive the rotation curve of the LMC by applying

2DBAT to the separated circular motions. The rotation curve reflecting the total kinematics of the LMC, dark and baryonic matters is then be combined with the mass models of baryons, mainly stellar and gaseous components in order to examine the dark matter distribution. Here, we present the analysis of the extracted HI gas maps, rotation curve, and J, H and K-band surface photometry of the LMC.

### [포 GC-04] HI gas kinematics of galaxy pairs in the Hydra cluster from ASKAP pilot observations

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We examine the HI gas kinematics and distribution of galaxy pairs in group or cluster environment from high-resolution Australian Square Kilometre Array Pathfinder (ASKAP) WALLABY pilot observations. We use 22 well-resolved galaxies in the Hydra cluster of which 4 galaxies are visually identified as pairs and others are isolated ones. We perform profile decomposition of HI velocity profiles of the galaxies using a new tool, BAYGAUD which enables us to separate a line-of-sight velocity profile into an optimal number of Gaussian components based on Bayesian MCMC techniques. All the HI velocity profiles of the galaxies are decomposed into kinematically cold or warm gas components with their velocity dispersion, 4~8 km/s or > 8 km/s, respectively. We derive the mass fraction of the kinematically cold gas with respect to the total HI gas mass, f = log10(M_cold / M_HI), of the galaxies and correlate them with their dynamical mass. The cold gas reservoir of the paired galaxies in the Hydra cluster is found to be relatively higher than that of the isolated ones which show a negative correlation with the dynamical mass in general.

### [포 GC-05] Galaxy overdensity around sub-mm sources from SPT-SZ survey

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We study the overdensity of near-infrared sources around 508 sub-mm sources classified as dusty galaxies in the SPT-SZ survey catalog observed in 95 GHz (3.15 $mm$), 150 GHz (2 $mm$) and 250 GHz (1.2 $mm$) bands. We used the VISTA hemisphere survey data release 6 (VHS DR6) catalog covering the J, H, Ks bands. The mean number of galaxies within a radius of 60 arcsec (corresponding to about 500 kpc at $z = 2$) from 500 randomly selected positions is 14.4, while the galaxy number distribution is approximated as a Gaussian with a standard deviation of 7.9. From the 2500 deg2 of SPT-SZ survey + VHS DR6 data, there were 27 sub-mm sources that have galaxy overdensity higher than 4σ. We present color-magnitude diagram around 27 selected sub-mm sources with enhanced galaxy surface densities, in order to investigate the presence of structure around sub-mm sources.

### [포 GC-06] GAS KINEMATICS AND PHOTOIONIZATION IN TYPE 1 AGNs WITH STRONG OUTFLOWS

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We present spatially resolved outflows and photoionization for a pilot sample of 11 type 1 AGNs (z<0.3) based on the Gemini Multi-Object Spectrograph Integral Field Unit data. These AGNs were selected since we found strong outflow signatures in SDSS spectra. We focus on [OIII] and Hα emission lines to probe outflow kinematics by measuring line flux, velocity, and velocity dispersion at each pixel. We investigate characteristics of gas kinematics of type 1 AGNs and compare them with those of type 2 AGNs in our previous studies. Furthermore, by drawing BPT map, photoionization states will be also discussed. Based on the results, we discuss various implications on the impacts of outflows on star formation in host galaxies.

### [포 GC-07] Gas kinematics and star formation in NGC 6822

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