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Studying the amount and kinematics of circum- and intergalactic medium (CGM and IGM) is key to understanding the role of feedback and environment (cold streams and galactic winds) in the evolution of galaxies. In particular, Lyα emission line has been utilized to investigate the density structure and kinematics of the (most abundant) H I gas in the CGM and IGM around galaxies. Therefore, modeling Lyα radiative transfer through multiphase interstellar medium (ISM), CGM and IGM is crucial in understanding the galaxy evolution. As discussed in Kakiichi & Dijkstra (2018), most Lyα RT effects would occur on interstellar scales. This is because the main source of Lyα photons would be H II regions, which are in most cases, if not all, surrounded by "cold" photo-dissociation regions. However, most Lyα RT studies have been performed in the CGM and IGM environments with T ~ 10,000K. In this talk, we present how the Lyα RT effect in the cold ISM with T ~ 100 K regulates the Lyα spectral properties.

[포 GC-05] Hubble Space Telescope Survey of Host Galaxies of Hard X-ray-Selected AGNs

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We present an ongoing imaging survey of the host galaxies of hard X-ray-selected active galactic nuclei (AGNs) observed with the Hubble Space Telescope (HST). The snapshot images are taken with the Advanced Camera for Surveys through an HST gap-filler program. The sample, selected from the 70-month Swift-BAT X-ray source catalog, represents an unbiased and uniform AGN population, which will enable us to test the AGN unification model and explore the physical connection between host galaxies and central supermassive black holes. We also plan to investigate the AGN triggering mechanism by examining merger signatures and searching for dual nuclei. We present the pipeline for imaging analysis and the current status of the survey.

[포 GC-06] Spectroscopic observation of the massive high-z (z=1.48) galaxy cluster SPT-CL J2040-4451 using Gemini Multi-Object Spectrographs

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Mass measurement of high-redshift galaxy clusters with high accuracy is important in constraining cosmological parameters. Extremely massive clusters at high redshift may impose a serious tension with the current ΛCDM paradigm. SPT-CL J2040-4451 at z=1.48 is considered one such case given its redshift and mass estimate inferred from the SZ data. The system has also been confirmed to be indeed massive from a recent weak-lensing (WL) analysis. Comparison of the WL mass with the spectroscopic result may provide invaluable information on the dynamical stage of the system. However, the existing spectroscopic coverage of the cluster is extremely poor; only 6 blue star-forming galaxies have been found within the virial radius, which results in highly inflated and biased velocity dispersion. In this work, we present a spectroscopic analysis of the member candidates using Gemini Multi-Object Spectrographs (GMOS) observation in Gemini South. The observation was designed to find early-type member galaxies within the virial radius and to obtain reliable velocity dispersion. We explain our selection scheme and preliminary results of the spectra. We also compare the dynamical mass estimate inferred from the velocity dispersion with the WL mass.

[포 GC-07] Star-gas misalignment in Horizon-AGN simulation

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Recent Integral Field Spectroscopy (IFS) studies revealed that not only late type galaxies (LTGs) but also early type galaxies (ETGs) have various kinds of kinematic rotation. (e.g. not clearly detectable rotation, disk-like rotation, kinematically distinct core (Cappellari 06)) Among the various studies about galactic kinematics, one of the most notable anomalies is the star-gas misalignment. The gas

forms stars and stars release gas through mass-loss. In this process, their angular momentum is conserved. Therefore, kinematic decoupling between stars and gas can occur due to external gas inflow or perturbation of components. There are some possible origins of misalignment: cold gas from filaments, hot gas from outer halo, interaction or merging events with galaxies and environmental effects.

Misalignment, the black box from mixture of internal and external gas, can be an important keyword for understanding further about galaxies' kinematics and external processes. Using both SAMI IFS data(Sydney-AAO Multi-object Integral field spectrograph Galaxy Survey, Croom+12) and Horizon-AGN simulation(Dubois+14), we examined misaligned galaxies properties and distribution. Because the simulation has lots of galaxies at various z, we were able to study history of formation, evolution and extinction of misalignment, which was hard to be done with observation only.

[포 GC-08] The Infrared Medium-deep Survey. VII. Optimal selection for faint quasars at z ~ 5 and preliminary results

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The universe has been ionized in the post-reionization by several photon contributors. The dominant source to produce the hydrogen ionizing photons is not revealed so far. Faint quasars have been expected to generate UV photon budgets required to maintain ionization state of universe. Observational limits, however, hinder to discover them despite their higher number density than bright one. Consequently, the influence of faint quasars on post-reionization are not considered sufficiently. Therefore, a survey to find faint quasars at z ~ 5 is crucial to determine the main ionizing source in the post-reionization era. Deep images from the Hyper Suprime-Cam Subaru Strategic Program (HSC SSP) allow us to search for quasar swith low luminosities in the ELAIS-N1 field. J band information are obtained by the Infrared Medium-deep Survey (IMS) and the UKIRT Infrared Deep Sky Survey (UKIDSS) - Deep ExtragalacticSurvey (DXS). Faint quasar candidates were selected from several multi-band color cut criteria based on simulated quasars on color-color diagram. To choose the reliable candidates with possible Lyman break, we have performed medium-bands observations. Whether a candidate is a quasar or a dwarf star contamination was decided by results from chi-square minimization of quasar/dwarf model fitting. Spectroscopic follow-up observations confirm three quasars at z ~ 5. 100% spectral confirmation success rate implies that the medium-band observations effectively select faint quasars with strong Lyman alpha emission.

[포 GC-09] Searching for LSB Dwarf Satellite Galaxies Around Nearby Galaxies in IMSNG Data

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Low surface brightness (LSB) dwarf galaxies hold a key to resolve the small-scale problems of Lambda Cold Dark Matter (LCDM) paradigm such as missing satellites problem. Many recent studies found LSB dwarf galaxies around massive galaxies beyond Local Group up to 10Mpc. Motivated by this, we can increase the number of them by searching for LSB dwarf galaxies around galaxies up to 40Mpc. We use stacked deep (μ_R~26.2 mag arcsec^{-2}) optical *B*, *R*-band images taken from Maidanak 1.5m telescope, one of facilities of Intensive Monitoring Survey of Nearby Galaxies (IMSNG) which monitored nearby galaxies in a day cadence from 2014 to 2016. Extended LSB sources in ambient regions of 16 nearby galaxies are selected using central surface brightness and total *R* magnitude criteria. After that, 24 LSB dwarf candidates are selected with visual inspection. To identify if the candidates are satellites or not, we are trying to compare the number density of LSB dwarf candidates around massive galaxies with those in Canada-France-Hawaii-Telescope Legacy Survey (CFHTLS) wide fields which have no dominant massive galaxies for control sample.

[포 GC-11] Examining the star formation properties of Virgo galaxies undergoing ram pressure stripping

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