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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