cosmological simulations, and (3) multi-wavelength study of galaxies. These tests underscore the importance of combining photometric and spectroscopic surveys in observations along with cosmological simulations for exploring and understanding the structure formation.

[초 IT-05] Cosmic Web: concept, skeleton, connectivity

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In this talk I will review the concept of the Cosmic Web which is behind our understanding of the filamentary structures in the matter distribution in our Universe at large scales, how it can be described geometrically, and some of its most basic properties.

외부은하 / 은하단

[구 GC-01] A New Iron Emission Template for Active Galactic Nuclei

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Fe II emission is a prominent and ubiquitous feature in the spectra of broad-line Active Galactic Nuclei (AGN) by producing a pseudo-continuum from UV to optical with complex and strong blends of the numerous emission lines themselves, other emission lines, and continuum. Since theoretical modeling of such intricate Fe II emission is very difficult and still far from able to reproduce observed data in detail, an empirical iron emission template, derived from observations of a narrow-line Seyfert 1 galaxy, is an essential and practical tool to obtain accurate measurements of all the emission lines and continuum in AGN spectra. However, the existing iron templates, based on the single prototypical strong Fe II emitter I Zw 1, are suffering from inadequate S/N and non-simultaneous, inconsistent data with limited wavelength coverage, which consequently limit the accuracy of all the spectral measurements. To overcome the limitations and construct an improved iron template with wide spectral coverage, high-quality UV and optical spectra for the new and better identified template galaxy, Mrk 493, were successfully obtained from our HST STIS program (GO-14744). We will show the preliminary results for multicomponent spectral decomposition of the data and template construction with application tests to various AGN spectra and comparison with previous templates.

[구 GC-02] Multiwavelength Study of an Off-nuclear Active Galactic Nucleus in NGC 5252

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We present a multiwavelength study of an ultraluminous X-ray source (ULX) in NGC 5252, which is known as a candidate for an intermediate-mass black hole. The ULX, located 22 arcsec away from the center of NGC 5252, was first discovered with the Chandra X-Ray Observatory. In the optical spectra, the strong narrow emission lines are found at the position of the ULX. It reveals that the ULX is likely associated with NGC 5252. The VLBA data of the ULX yields that the black hole mass of the ULX is smaller than 106 solar mass, inferred from the black hole fundamental plane. From the near-infrared imaging data, we find that the stellar mass associated with the ULX is smaller than ~107.9 solar mass, implying that the ULX can be a remnant of a merging dwarf. We also find that K-band luminosity of the ULX is two orders of magnitude smaller than typical active galactic nuclei at a given [OIII] luminosity. It may suggest the ULX lacks the dusty torus possibly due to the disappearance of dusty material during the recoiling process.

[구 GC-03] Radiative pressure feedback in obscured quasars

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Ricci et al. (2017, Nature, 549, 488) discovered a lack of high accretion rate, obscured Active Galactic Nuclei (AGN) in the hard X-ray selected Swift/BAT local AGN survey. This was interpreted as radiative pressure driven AGN feedback clearing its immediate vicinity composed of dusty gas (having an effectively low Eddington limit in the order of 0.01-0.1), and governing the level of

nuclear obscuration. As we find Eddington-limited accretion and high extinction values among obscured, luminous AGN (quasars) however, it may be that the local X-ray AGN and the distant quasars undergo different feedback mechanisms in clearing their surroundings. In this study, we simply compare the obscuring column density and Eddington ratio values for quasars selected by various methods, including X-ray obscured, optically blue, infrared red/luminous, and submillimeter bright AGN. We find obscured quasars lying on the column density-Eddington ratio diagram previously unoccupied by Ricci et al., suggesting that radiative pressure is insufficient to clear its dusty structure at high luminosity, or that the dust in obscured quasars are more extended than the low luminosity counterparts to become fully transparent. We discuss alternative feedback scenarios that may be more relevant for obscured quasars.

[구 GC-04] Lyα Radiative Transfer: Modeling Spectrum and Surface Brightness Profile of Lyα Emitting Galaxies at z=3-6

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We perform Lyα radiative transfer calculations for reproducing Lyα properties of star-forming galaxies at high redshifts. We model a galaxy as a halo in which the density distributions of Lyα sources and HI plus dust medium are described with exponential functions. We also consider an outflow of the medium that represents a momentum-driven wind in a gravitational potential well. We demonstrate that this outflowing halo model with Lyα scattering can successfully reproduce both the spectrum and the surface brightness profile of eight star-forming galaxies at z=3-6 observed with MUSE. The best-fit model parameters (i.e., the outflowing velocity and optical depth) for these galaxies are in good agreement with other studies. We also demonstrate benefits of using spectrum and surface brightness profile simultaneously to the constraints on model parameters and thus spatial/kinematic distributions of medium. We examine the impacts of individual model parameters and intrinsic spectrum on emerging spectrum and surface brightness profile. Further investigations on the escape fraction, spatially resolved spectra, and the spatial extent of Lyα halos are presented as well.

[구 GC-05] Bar Formation and Evolution in Disk Galaxies with Classical Bulges

Woo-Young Seo[1] , Woong-Tae Kim[2] in Eng. ...
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To study the effects of central mass concentration on the formation and evolution of galactic bars, we run fully self-consistent simulations of Milky Way-sized, isolated galaxies with initial classical bulges. We let the mass of a classical bulge mass less than 20% of the total disk mass, and vary the central concentration of a dark matter halo. We find that both classical bulge and halo concentration delay the bar formation and weaken the bar strength. The presence of a bulge increases the initial rotational velocity near the center and hence the bar pattern speed. Bars in galaxies with a more concentrated halo slowdown relatively rapidly as they lose their angular momentum through interaction with the halo. In some of our models, bars do not experience slowdown at the expense of the decrease in their moment of inertia as the bar evolves, with the resulting pattern speed similar to that of the bar in the Milky Way.

[구 GC-06] Galaxies in different dynamical halo state; GAMA observation

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We study the stellar populations of the brightest group galaxies (BGGs) in groups whose halos have different dynamical states, using observational data from the GAMA survey. The two independent indicators to probe the dynamical state of the halo are the magnitude gap between two most luminous galaxies (△M12) and offset between BGG and the luminosity center (Doffset) of the group. Such indicators complement each other in identifying relaxed and unrelaxed galaxy groups in our samples. We find that the BGGs of unrelaxed groups have significantly bluer NUV-r colours than in relaxed groups. This is also true at fixed sersic index. We find the bluer colours cannot be