ionized gas and stars along the major axis of 9 pseudo bulge galaxies. Using the high quality long-slit spectra obtained with the FOCAS at the Subaru telescope, we measured the flux, velocity, and velocity dispersion of the [OIII] and Hβ lines to determine the size of the narrow-line region, rotation curve, and the radial profile of velocity dispersions. We compare ionized gas kinematics and stellar kinematics to investigate whether ionized gas shows any signs of outflows and whether stars and ionized gas show the same sigma-dip feature (i.e., decrease of velocity dispersion) at the very center.

[포 GC-26] Intensive Monitoring Survey of Nearby Galaxies

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We describe our ongoing project, Intensive Monitoring Survey of Nearby Galaxies. This survey is designed to study transients such as Supernovae (SNe) in nearby galaxies. Our targets are UV-bright (MUV < -18.4) and nearby (d < 50 Mpc) 50 galaxies selected from a GALEX catalog, whose star formation rates are larger than normal galaxies. High star formation in these galaxies ensures that core-collapse supernova explosions occur more frequently in them than normal galaxies. By monitoring them with a short cadence of a few hours, we expect to discover 5 SNe/yr events. Most importantly, we hope to construct very early light curves in rising phase for some of them, which enables us to understand better the physical properties of progenitor star and the explosion mechanism. To enable such a high cadence observation, we constructed a world wide telescope network covering northern, southern hemisphere distributed over a wide range of longitudes (Korea, US, Australia, Uzbekistan and Spain). Data reduction pipe line, detection and classification algorithms are being developed for an efficient processing of the data. Using the network of telescopes, we expect to reach observe not only SNe but also other transients like GRBs, Asteroid, variable AGNs and gravitaional wave optical counter part.

[포 GC-27] Examination of the Co-evolution of Galaxies and their Central SMBHs at High Redshifts with Gravitational Lensing by QSO Host Galaxies

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The M_{BH}-σ relation for galaxies is a stand-out illustration of the co-evolution of galaxies and their central supermassive black holes (SMBHs); however, how this co-evolution occurs and whether this relation holds for SMBHs of the early universe is still a matter of debate. In order to study this at higher redshifts, quasi-stellar objects (QSOs) are the best targets, due to their large sample size and effective M_{BH} estimation. Nevertheless, it is difficult to examine properties of their host galaxies, simply due to the sheer brightness of the QSO itself. Here, we discuss a distinctive method in studying these QSO host galaxies, via gravitational lensing (GL). GL offers a unique approach in determining the mass of the lens object, in this case the host galaxy. QSOs from the SDSS quasar catalog were searched in the *Hubble Space Telescope* archives, and GL features around them were visually inspected. One such candidate is SDSS J1114-00; to increase its robustness as a GL system candidate, it was observed with the Inamori-Magellan Areal Camera & Spectrograph (IMACS) on the Magellan Baade Telescope at Las Campanas Observatory, to check whether the GL features have identical colors, meaning they are likely to originate from the same source. After confirmation of such GL systems, a sufficiently large sample will enable us to examine the M_{BH}-σ relation at various redshifts, and in turn, investigate the co-evolution of SMBHs and their host galaxies.

[포 GC-28] High redshift galaxy clusters and superclusters in ELAIS-N1

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Galaxy overdensities such as galaxy clusters and superclusters are the largest gravitationally bound systems in the Universe. Since they contain many different levels of local densities, they are excellent

places to test galaxy evolution models in connection to the environments. The environment studies of galaxies at $z \sim 1$ are important because the environmental quenching seems to be an important mechanism to reduce star formation activities in galaxies at $z < 1$.

However, there have been not many studies about high redshift galaxy clusters at $z \sim 1$ because of the lack of wide and deep multi-wavelength data. We have used the multi-wavelength data from the UKIDSS DXS (J and K band), the SWIRE (4 IRAC bands), and the PAN-STARRS (g, r, i, z, y bands) in the ELAIS-N1 field. We identified galaxy cluster candidates at $0.2 < z < 1.6$ using the multi-wavelength data.

We found several superclusters where cluster candidates are concentrated on few tens of Mpc scale. Interestingly, some of the supercluster candidates consist of galaxy clusters which have high blue galaxy. We will present high redshift galaxy cluster and supercluster candidates in ELAIS-N1 field and galaxy properties in different environments including dense clusters and fields.

성간물질 / 별생성 / 우리은하

[포 IM-01] Outflow properties of DIGIT embedded sources

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We present a study of outflows on 24 embedded young stellar objects selected from the source list of the Dust, Ice, and Gas in Time (DIGIT) Herschel key program. To study the relation between the CO outflows observed in low-J transitions and the properties of protostars more consistently with a homogeneous data set, we mapped the CO outflows of the selected targets in the J = 1-0 and J = 2-1 lines with two Korean telescopes (SRAO and TRAO). We compare CO outflow force (F_{CO}) with the bolometric luminosity, (L_{bol}) bolometric temperature, and the FIR molecular line luminosities of CO, H_2O, OH, and [O I] detected by the Herschel-PACS observations. We find that F_{CO} of J = 1-0 is greater than that of 2-1 by a factor of $\sim$ 2. The well known correlation between $F_{CO\ 2-1}$ and L_{bol} is not very evident in our sample as a whole, but they show a rather strong correlation when IRAM 04191+1522 is excluded. IRAM 04191+1522 has relatively high $F_{CO\ 2-1}$ in spite of its low L_{bol}. This object is a well-known VeLLO, which is believed in the quiescent phase of the episodic mass accretion in the embedded stage. L_{bol} traces a current accretion, but $F_{CO\ 2-1}$ traces accretion happened long ago. Therefore, the low-L_{bol} with the high-$F_{CO\ 2-1}$ can be explained by the episodic accretion. F_{CO2-1} shows little correlation with individual FIR line luminosities of CO, H_2O, OH, while [O I] and total FIR line luminosity seem to have correlations with $F_{CO\ 2-1}$. This result is interpreted as the accretion energy deposits on species differently depending on shock properties, but the total FIR line luminosity sums the total accretion energy dispersed to different species.

[포 IM-02] Chemical Distributions of Carbon-Enhanced Metal-Poor (CEMP) Stars from the Baryon Oscillations Spectroscopic Survey (BOSS)

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We present spatial and chemical distributions of Carbon-Enhanced Metal-Poor (CEMP) stars in the Milky Way's halo, as observed by the Baryon Oscillation Spectroscopic Survey (BOSS). Although the BOSS was designed to obtain spectra of galaxies and quasars, it also observed numerous metal-poor main-sequence turnoff stars for the purpose of flux calibration. The stars observed in the BOSS are two magnitudes fainter ($15.5 < g < 19.2$) than those in the legacy SDSS, thus it is an extremely useful sample to probe the distant halo. Using effective temperatures, surface gravities, [Fe/H], and [C/Fe] derived for these stars by the SEGUE Stellar Parameter Pipeline (SSPP), we investigate the spatial distribution of [Fe/H] and [C/Fe], the distribution of [C/Fe], and frequency of CEMP stars among these stars. These tools enable characterization of the origin of the halo and its initial mass function.

[포 IM-03] Dark Matter Content in Three Galactic Globular Clusters - 47 Tuc, NGC 1851, and M 15

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