

significant lines including Si II and Ca II lines will be shown and discussed.

[포GC-08] The optical afterglow of GRB 180205A

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On 2018 February 5 a gamma ray burst with trigger time 04:25:29.3 UT was detected by Swift BAT and this event was named GRB 180205A. We observed the optical afterglow of GRB 180205A starting from about 1 hour after the burst until February 22 in the optical bands with the 1m telescope of Deokheung Optical Astronomy Observatory (DOAO), the 1m telescope at Mt. Lemmon Optical Astronomy Observatory(LOAO) and the 0.8m and 0.25m telescopes at McDonald Observatory.

According to the fireball model, which is a well-accepted and conventional model for the afterglow of the GRB, the mechanism of the afterglow is that the expanding external blast wave of the GRB successively collides with the ambient medium and loses its energy, and as a result emits radiation at wavelengths longer than gamma rays.

Here we present optical photometry and light curve of the afterglow in the R band and analyze it to characterize GRB 180205A.

[포GC-09] Identifying Cluster Candidates in CFHTLS W2 Field

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Recent studies of galaxy clusters have shown that the galaxy clusters in dense environment tend to have lower star formation rate in local universe with $z < 1$. However, this correlation is not significant in galaxy clusters with $z > 1$. The study of galaxy clusters around $z=1$ can yield insight into cosmological galaxy evolution. Nevertheless, the identification of galaxy clusters beyond the scope of immediate local universe requires wide field data in optical and near-infrared bands. By incorporating data from Canada-France-Hawaii Telescope Legacy Survey(CFHTLS) and Infrared Medium-Deep Survey(IMS), the photometric

redshifts of galaxies in CFHTLS W2 field were calculated. Using spatial distribution and photometric redshifts, the galaxies in the field were divided into redshift bins. The image of each redshift bin was analyzed by measuring the number density within proper distance of 1Mpc. By comparing high density regions in consecutive redshift bins, we identified the cluster candidates and mapped the large-scale structure within the CFHTLS W2 field.

[포GC-10] Lyman-alpha radiative transfer through outflowing halo models to understand both the observed spectra and surface brightness profiles of Lyman-alpha halos around high-z star-forming galaxies

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With a recent observational study of extended Lyman-alpha halos around individual high-z star-forming galaxies by Leclercq et al. (2017) using MUSE, we perform radiative transfer calculations to see if Lyman-alpha scattering can explain the spatial extents of the halos together with their spectra. We adopt a spherically-symmetric halo model in which Lyman-alpha sources and neutral hydrogen (HI) medium have exponential density distributions. The HI medium is set to have outflowing motion based on a momentum-driven wind scenario in a gravitational potential well. We run our Lyman-alpha radiative transfer code, LaRT, upon this halo model for various sets of parameters regarding the HI medium such as temperature, optical depth, density scale radius, outflow velocities, and dust content. We analyze simulation results to see the impact of each parameter on Lyman-alpha spectra and surface brightness profiles, and degeneracies between the parameters. We also find a parameter set that best reproduces simultaneously the observed spectra and surface brightness profiles of the MUSE Lyman-alpha halos.

[포GC-11] Survey of Faint Quasar candidates at $4.7 \leq z \leq 5.2$

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To investigate the impact of the high-redshift quasars on cosmic reionization, the faint end slope of the quasars luminosity function has to be determined precisely. More quasars with low luminosity are needed to constrain the contribution to reionization in the early universe. However, finding these quasars has been regarded as tough process owing to the improper shallow depth of imaging data. In recent days, the release data of Subaru Hyper Suprime-Cam (HSC) Strategic Program survey which provide the deep images reaching ~ 25 mag facilitates searching the faint quasars candidates. To find faint quasar candidates in ELAIS-N1 field, along with the HSC data, two near-infrared (NIR) data sets also be used : The Infrared Medium-deep Survey (IMS) and The UKIRT Infrared Deep Sky Survey (UKIDSS) - Deep Extragalactic Survey (DXS). Quasar candidates selected from the multi-band color cut were observed by the SED camera for QUasars in EARly uNiverse (SQUEAN) instrument. To trace the redshifted Lyman break efficiently, appropriate medium bands comparable to targeted redshift range are chosen. The most reliable quasar candidates are finally determined through SED fitting. Using this less luminous quasars candidates, we can speculate the relation between the quasar growth and the host galaxy unbiasedly and estimate the contribution to the cosmic reionization.

[포GC-12] Specific star formation rate of the MIR-selected galaxies in AKARI NEP-Wide

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We investigate the $SFR-M_*$ relation of the infrared luminous galaxies selected in either $11 \mu m$ and $15 \mu m$ from the 5.6 deg^2 of the AKARI NEP-Wide field. From the constructed multi-wavelength catalog spanning $0.3 \mu m$ to $24 \mu m$, we select 3,408 S11 $> 50 \mu Jy$ galaxies and 1,896 L15 $> 20 \mu Jy$ galaxies which corresponds to

$L_{IR} \sim 10^{11} L_{\odot}$ at $z \sim 0.5$ and 0.7 respectively. Photometric redshifts of the selected galaxies were derived using LePHARE and Coleman Extended templates. $\sim 98\%$ S11 selected galaxies are galaxies with $\langle z \rangle$ (median redshift) ~ 0.4 , and $\sim 96\%$ L15 selected galaxies are galaxies with $\langle z \rangle \sim 0.6$. Star formation rates and stellar mass of these galaxies were calculated using MAGPHYS which derives physical parameters with SED fitting. In the $SFR-M_*$ diagram, $11 \mu m/15 \mu m$ selected galaxies are located in the main sequence of star-forming galaxies at $z \sim 1$.

[포GC-13] Photometric Properties and Spatial Distribution of RSGs of Nearby Galaxy System: Leo Triplet

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We present the near infrared JHK photometric properties and the spatial distribution of red supergiants(RSGs) of NGC 3623, NGC 3627 and NGC 3628 in the Leo Triplet system using the data obtained with 3.8m UKIRT(United Kingdom Infra-Red Telescope) at Hawaii. We checked interaction between the three galaxies by making a spatial density map of RSGs. From (J-K,K)0 Color-Magnitude Diagram which include resolved stars in three galaxy and control field with PARSEC isochrone, we figured out the RSG candidates of the Leo triplet are at $0.9 < (J-K)0 < 1.2$, $m_K < 17.5$ and separated them from background and foreground sources. Using gaussian kernel density estimation, we drew spatial density map of RSGs in the Leo triplet with an assumption that all RSGs are an identical population. The density map shows extended features of NGC 3628 to NGC 3627 along the declination direction. The asymmetries between NGC 3627 and NGC 3628 might be evidence for that the distribution of actual star components(RSGs) follows the neutral hydrogen distribution and also for interaction between two galaxies. And the extended features along the right ascension direction might be a supporting evidence for the existence of a TDG(Tidal Dwarf Galaxy). In case of NGC 3623, we could not see any sign of interaction in density map.

[포GC-14] Hydrodynamics Simulation of the Off-Axis Cluster Merger Abell 115

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Abell 115 is a renowned cluster merger at $z=0.197$. It exhibits an asymmetric X-ray