[구IMS-03] High Redshift Quasar Survey

Yiseul Jeon[1] and Myungshin Im[1], and IMS team
[1]*CEOU/Astronomy Program, Dept. of Physics & Astronomy, Seoul National University*

We describe a survey of quasars in the early universe beyond z=5, which is one of the main sciences of the Infrared Medium-deep Survey (IMS) performed by the Center for the Exploration of the Origin of the Universe (CEOU). We use multi-wavelength archival data such as SDSS, CFHTLS, UKIDSS, and SWIRE, which provide deep images over wide areas sufficient enough for searching high redshift quasars. In addition, we carried out a J-band imaging survey at the United Kingdom InfraRed Telescope (UKIRT) with a depth of ~23 AB and survey area of ~100 deg^2, which makes IMS the most suitable survey for finding high redshift quasars at z~7. Also for the quasar candidates at z~5.5, we are conducting observations with the Camera for QUasars in EArly uNiverse (CQUEAN), which are efficient for selecting robust quasar candidate samples in this redshift range. We used various color-color diagrams suitable to the specific redshift ranges, which can reduce the contaminating sources such as M/L/T dwarfs, low redshift galaxies, and instrumental defects. The high redshift quasars we are confirming can provide us with clues to the growth of super massive black holes since z~7. Also by expanding the quasar sample at $5<z<7$, the final stage of the hydrogen reionization in the intergalactic medium (IGM) can be fully understood. Moreover, we can make useful constraints on the quasar luminosity function to study the contribution of quasars to the IGM reionization.

[구IMS-04] High redshift clusters of galaxies

Jae-Woo Kim, Myungshin Im, Seong-Kook Lee, Yiseul Jeon, Minhee Hyun
CEOU/Astronomy Program, Dept. of Physics & Astronomy, Seoul National University, Seoul, KOREA,

A galaxy cluster is an important laboratory to study the large scale structure in the Universe and the galaxy evolution. In order to identify candidate galaxy clusters at z~1, we have used deep and wide optical-NIR datasets based on IMS, UKIDSS DXS and CFHTLS wide covering ~20deg^2 in the SA22 field. We measure the angular two-point correlation function of the candidate clusters and investigate the star formation activity of the member galaxies. Based on bias factor and halo mass function, candidate clusters have the average halo mass of $>10^{14}h^{-1}M_{\odot}$. At z~1, the star formation rate of cluster galaxies is similar to that of field galaxies, which indicates the environmental quenching is not so significant at z~1 as the local Universe.