[GC-18] CEOU: Center for the Exploration of the Origin of the Universe

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We introduce research projects being carried out at CEOU (Center for the Exploration of the Origin of the Universe) at Seoul National University. CEOU is one of Creative Research Initiatives research centers, which started its operation in June 2008 as a 9-year project. The main focus of the CEOU is a NIR Intermediate-wide, Medium-deep survey which aims to cover ~150 square degree of the sky to the depth of 23 AB magnitude in J-band. The survey will be carried out using the United Kingdom Infrared Telescope (UKIRT) and a 2-m class equipped with a mosaic camera with deep depletion CCD chips which we are now developing. The main objectives of the survey are to discover and study (1) the first quasars in the universe at $z > 7$; and (2) the first massive galaxy clusters at $1 < z < 2$. Our study, however, will not be limited to these surveys. We are also carrying out various projects to understand the nature of distant galaxies and the growth of supermassive blackholes in quasars, including overdensity at high redshift, galaxy property and evolution near and far, and two programs related to quasars such as SNUQSO (Seoul National University Bright Quasar Survey), and QSONG, a NIR spectroscopy study of quasars.

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[GC-19] Y-band Imaging of Extragalactic fields and High Redshift Quasars

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We carried out the observations of several extragalactic fields, brown dwarfs, high-z QSO and A0V standard star imaging with Y-band filter at the Mt. Lemmon Optical Astronomy Observatory (LOAO) and the Maidanak Observatory. The deepest limit magnitude of 260 minutes exposure is Y = 21.5 AB mag in case of LOAO and Y = 22 AB mag for the Maidanak Observatory. Using the Y-band imaging data, we measured photometric calibration parameters of Y-band. We got two photometric calibration parameters atmospheric extinction coefficient k = 0.087 and zero point ξ = 18.29 in LOAO , k = 0.1 and zero point ξ = 19.14 mag in Maidanak Observatory. We performed number counts in Y-band imaging fields and found slopes consistent with previous I-band and J-band data. Also, we tested the usefulness of high redshift QSO ($z > 6$) selection via i-z VS z-Y color-color diagram. The discrimination method between them with i-z va z-Y color-color diagram shows that it is as effective as the i-Y vs Y-J color-color diagram method which means we can search high redshift QSOs effectively with an optical CCD installed at 1m class telescopes. Furthermore we analyzed characteristics of Y-band objects with color-magnitude diagram and redshift - Y-band magnitude relation.

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