Distribution and evolution of high-z galaxies in the Subaru / XMM-Newton Deep Survey Field (SXDF)

K. Sekiguchi1 and M. Ouchi2

1Subaru Telescope, National Astronomical Observatory of Japan
2Space Telescope Science Institute

Abstract. We present results from our on-going study of the distribution and evolution of high-
z galaxies. We exploited the large area coverage (~1.3 deg^2) of the Subaru / XMM-Newton Deep Survey field (SXDF) to search for Lyman-break galaxies (LBGs) and Lyα Emitters (LAEs) at 3 < z < 7. We have found filamentary large scale structures, which are made of LAEs, with ~10 to 40 Mpc (in commoving units) scale voids as early as at z = 5.7. Galaxies at this redshift show clustering of ~1 Mpc in diameter (in physical unit). The inferred star formation rate density of these clustering is ~130 times the mean of the whole area, indicates burst of star formation activities. Combined with the UKIDSS/UDS photometry, the optical+near-IR SED fitting provides the estimate of masses for some of these high-z galaxies. Preliminary results indicate a number of galaxies at z > 5 have already grown up to ~10^{11} solar mass.

Keywords. cosmology: large-scale structure, galaxies: distance and redshifts, evolution

1. Discussion

The Subaru / XMM-Newton Deep Survey field (Sekiguchi et al. 2004) has been a focus of our studies of the high redshift galaxies (Ouchi et al. 2005, Sekiguchi et al. 2006). The field has a deep multi-bands optical and near-infrared data set by Subaru Telescope and by the UKIRT WFCAM (Casali et al. 2006, in preparation) respectively, which can be exploited for selecting high-redshift galaxy candidates. The large area coverage of the SXDF resulted a discovery of structures by the LAEs and voids as early as at z = 5.7 (Ouchi et al. 2005). Also, with the early UKIDSS/UDS (Lawrence et al. 2006) data, McLure et al. (2006) found a few of the LBGs at z > 5 with the stellar mass up to ~10^{11} solar mass.

References

Sekiguchi, K. et al. 2004, Astrophysics and Space Science Library 301, 169