

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

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Abstract. We present results from our on-going study of the distribution and evolution of high- z galaxies. We exploited the large area coverage ($\sim 1.3 \text{ deg}^2$) of the Subaru / XMM-Newton Deep Survey field (SXDF) to search for Lyman-break galaxies (LBGs) and Ly α Emitters (LAEs) at $3 < z < 7$. We have found filamentary large scale structures, which are made of LAEs, with ~ 10 to 40 Mpc (in comoving 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 $\sim 10^{11}$ 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 $\sim 10^{11}$ solar mass.

References

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