

X51a Spectroscopic confirmation of the most distant overdensity at $z = 6.6$

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In the large-area deep Subaru/Hyper Suprime-Cam narrow-band data, we identified 14 and 28 LAE overdensities at $z = 5.7$, and 6.6 , respectively. Our spectroscopic observations have recently detected Ly α emission from 9 LAEs in one of the overdensities at $z = 6.6$, making it the most distant overdensity spectroscopically confirmed. Wideband SEDs ($0.4 - 4.5 \mu\text{m}$) including the Spitzer data indicate that galaxies in over-dense regions are more actively forming stars than those in less-dense regions. We compare our results with simulations, and found that the overdensity will grow to the cluster-scale halo ($M_{\text{h}} \sim 10^{14} M_{\odot}$) at the present day. Based on these results, we will discuss the implication for galaxy formation.