

Observations of galaxies at $z > 6$. The properties of large, spectroscopic samples

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Abstract. Observed properties of spectroscopically confirmed galaxies at $z \gg 5$ and $z \gg 6$ based on selection from deep, multi-wavelength wide-field samples provide a picture of the current status of the properties of high-redshift galaxies and their evolution to yet higher redshifts.

In the current presentation, we use results of deep, wide-field spectroscopy with the multi-object DEIMOS spectrograph on Keck in combination with deep, wide-field multi-color imaging studies using the SUPRIMECAM CCD camera of Subaru for a number of fields, to evaluate the luminosity function of high-redshift galaxies and its evolution at $z > 6$. High-redshift candidates are selected using both narrow-band Lyman alpha emission and broad-band colors with a high success-rate from a number of SUPRIMECAM (0.5 degree FOV) fields.

Luminosity functions and Lyman α emission line profiles and equivalent widths appear similar between samples at $z \simeq 5.7$ and $z \simeq 6.5$, and the galaxy distribution is structured both spatially and in redshift. A large amount of cosmic variance is seen in the distribution of $z \gg 6$ galaxies from field to field.

The observed properties are discussed in relationship to their impact on strategies for complementary optical surveys of high-redshift galaxies, and in relationship to surveys at very different wavelengths (X-ray, far-infrared, and submillimeter) that cover the same regions.

Keywords. galaxies:high-redshift, infrared: galaxies, early Universe
