The faint end of the UV luminosity function of $z \sim 2$ galaxies from the HST and the ground-based observations

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Abstract

We present UV luminosity functions (LFs) at 1500 Å derived from the ground-based optical photometry and the Hubble Space Telescope optical and deep near-IR data acquired over $\sim$175 $arcmin^2$ of the CANDELS/$GOODS_{south}$ and the Hubble Ultra Deep Field (HUDF). Our reliable photometric redshifts are determined by applying Le-Phare (a template fitting technique) on two comprehensive photometric catalogues of the CANDELS/ $GOODS_{south}$ and the HUDF12 surveys and are used to obtain our LFs in the redshift range $z = 1.5 - 2.5$ to study the evolution of $z \sim 2$ galaxies. With our new samples, we are able to directly probe the $z \simeq 2$ LF down to $M_{1500} \simeq -14$, hence setting new improved constraints on the faint-end slope. We compare our findings to recently published results derived with the aid of gravitational lensing and from galactic archaeology.