

**The VIMOS Ultra Deep Survey: The UV Luminosity Function up to  
 $z \sim 5$**

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**Abstract**

Luminosity functions describe the number of galaxies at a given luminosity in a certain volume. Tracing the evolution of the luminosity function in the UV with redshift then allows one to understand the evolution of galaxies and their star formation rates and to compute the star formation history of the Universe. Many studies have investigated the UV luminosity function and its evolution with redshift out to very high redshifts relying largely on photometry alone. The very deep rest-frame UV spectroscopy obtained with VUDS for galaxies between redshift 2 and  $\sim 6$  in combination with spectroscopy from the VVDS survey and the deep photometric data from Ultra-VISTA and CANDELS allows us for the first time to reach a spectroscopy-based measurement of the rest-frame UV luminosity function out to redshift 5 and to obtain a more robust measurement of the faint end slope of the LF between  $z \sim 2$  and 4. We will extend this study to put tighter constraints on the cosmic evolution of the dust attenuation and star formation rate density out to  $z \sim 5$ .