

**X26b Ly $\alpha$  Luminosity Function at  $z = 1.9 - 3.5$  and the HETDEX Survey**

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The luminosity function (LF) is an important tool for understanding the statistical properties of galaxies along the cosmic history. Previous studies about the Ly $\alpha$  LF at  $z \sim 2 - 3$  have found a significant excess over the Schechter function at the bright end (Konno et al., 2016; Sobral et al., 2018), raising questions to the nature of very luminous Ly $\alpha$  emitters (LAEs) at cosmic noon. To address this question, we investigate the shape of Ly $\alpha$  LF at  $z = 1.9 - 3.5$  using the early data of Hobby Eberly Telescope Dark Energy eXperiment (HETDEX) survey. The HETDEX survey is the largest blind integral field spectroscopic survey by far, which will cover  $\sim 450 \text{ deg}^2$  of sky area, corresponding to  $\sim 9$  comoving Gpc $^3$  of cosmic volume. About one million unbiased, spectroscopically selected LAEs are expected at the completion of the survey. Utilizing the large data, we derive the Ly $\alpha$  LF by both the non-parametric  $1/V_{\text{max}}$  method and the parametric Schechter function fitting. Our results have the best-fit Schechter function consistent with previous studies, and show a moderate excess above the Schechter function at  $L_{\text{Ly}\alpha} \geq 10^{43.3} \text{ erg s}^{-1}$ . We will discuss the origin of the bright end excess, as well as future plans of the HETDEX survey.