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GREEN PEA GALAXIES REVEAL SECRETS OF Ly? ESCAPE HUAN YANG, Arizona State University — In star-forming galaxies, a lot of Lyα photons were generated in HII regions surrounding massive stars. The escape of Lyα photons from galaxies is a key issue in studying high redshift galaxies and probing cosmic reionization with Lyα. To understand Lyα escape, it is valuable to study high quality Lyα profiles in Lyα emitters. However, such studies are rare due to the faintness of high-z Lyα emitters and the lack of local analogs with high Lyα equivalent width. Here we show that "Green Pea" galaxies are the best local analogs of high-z Lyα emitters and their high quality Lyα profiles demonstrate low HI column density is the key to Lyα escape. The Lyα escape fraction shows correlations with a few features of Lyα profiles. We compared the Lyα profiles with outflowing HI shell radiative transfer model and found that the best-fit HI column density is anti-correlated with the Lyα escape fraction. We also found an anti-correlation between Lyα escape fraction and galactic metallicity. Our results support that LAEs with high Lyα escape fraction have low metallicity, low HI column density, and mild HI gas outflow.

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