

Two Lensed Lyman-alpha Emitting Galaxies at $z\sim 5$

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We present observations of two strongly lensed Lyman- α Emitting (LAE) galaxies that were discovered in the Sloan Giant Arcs Survey (SGAS). We identify the two sources as SGAS J091531+382655, at $z=5.200$, and SGAS J134331+415455 at $z=4.994$, and measure their Vega magnitudes at $(i,z)=(22.92 \pm 0.09, 22.75 \pm 0.13)$ mags and $(i,z)=(23.36 \pm 0.18, 23.70^{+0.18}_{-0.16})$ mags, respectively. Each source is strongly lensed by a massive galaxy cluster in the foreground, and the magnifications due to gravitational lensing are recovered from strong lens modeling of the foreground lensing potentials. We use the magnification to calculate the intrinsic, unlensed Lyman- α luminosities for both sources, as well as the star formation rate (SFR) implied by the Lyman- α emission. Comparison of the spectral energy distributions (SEDs) of both sources against stellar population models produce estimates of the stellar mass in each galaxy: $M_{\text{stars}}=1.29^{+0.95}_{-0.55}\times 10^8 M_{\text{sun}} h_{0.7}^{-1}$ for SGAS J091531+382655 and $M_{\text{stars}}\sim 6\times 10^7 M_{\text{sun}} h_{0.7}^{-1}$ for SGAS J134331+415455. Compared to samples of LAEs in the literature at similar redshifts, the intrinsic $L_{\text{Ly-}\alpha}$ of these two lensed sources places them well down the faint end of the luminosity function.

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