

SHELLQs narrow-line quasars observed with Chandra and JWST

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Twenty or more narrow-line ($\text{FWHM} < 500 \text{ km/s}$) quasars have been discovered through the high- z quasar search project SHELLQs, based on the Subaru HSC Survey. Their narrow but luminous Ly $_{\alpha}$ make them good candidates of obscured quasars at $z > 6$, that are expected to be abundant. Besides the discovery spectra in the rest-frame UV band, JWST-NIRSpec data of 9 objects have been acquired during the Cycle-2. Many of these spectra exhibit broad Balmer emission at the base of narrow lines, similar to the fainter JWST-selected AGN. We selected four objects as promising obscured quasar candidates that are characterised by exceptionally faint UV continuum and large Ly $_{\alpha}$ luminosity exceeding 10^{44} erg/s to be observed with Chandra. However, these X-ray observations resulted in no detection in the rest-frame 7-35 keV band, placing them in the X-ray faint regime. If heavy obscuration plays a role, it should occur at inner regions, given small Balmer decrements seen in narrow lines of the JWST spectra. Along with other possible explanations, we consider supercritical accretion for the high- z quasar population and, due to the inherent anisotropy of radiation in the supercritical accretion flow at innermost radii, the X-ray faintness of our SHELLQs narrow-line quasars might arise from an orientation effect.

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