

## X07a Subaru High- $z$ Exploration of Low-Luminosity Quasars (SHELLQs): Star formation properties of the host galaxies at $z \gtrsim 6$

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We present our ALMA Cycle 4 measurements of the [C II] emission line and the underlying far-infrared (FIR) continuum emission toward four optically low-luminosity ( $M_{1450} > -25$ ) quasars at  $z \gtrsim 6$  discovered by the Subaru Hyper Suprime Cam (HSC) survey. The [C II] line and FIR continuum luminosities lie in the ranges  $L_{[\text{CII}]} \simeq (4 - 10) \times 10^8 L_{\odot}$  and  $L_{\text{FIR}} \simeq (1 - 2) \times 10^{11} L_{\odot}$  (star formation rate  $\sim 23 - 40 M_{\odot} \text{ yr}^{-1}$ ), which are at least one order of magnitude smaller than those of optically-luminous quasars at  $z \gtrsim 6$ . Their line and continuum-emitting regions are resolved, and found to be comparable to those of optically and FIR-luminous quasars, suggesting that their gas mass surface densities (a key controlling parameter of black hole accretion) are accordingly different. Using the [C II] dynamics, we derived their dynamical masses within a radius of 1.5–2.5 kpc as  $(1.4 - 8.2) \times 10^{10} M_{\odot}$ . By interpreting these as stellar masses and placing the HSC quasars on the  $z \sim 6$  star-forming main sequence, we suggest that they appear to be transforming into quiescent galaxies. Furthermore, we find that the ratios of black hole mass to host galaxy dynamical mass of these HSC quasars are consistent with the local value. The mass ratios of the HSC quasars can be explained by a semi-analytical model that assumes quasi-synchronized black hole-host galaxy evolution.