

X05a Post-Starburst Signature in Quasar Host Galaxies at $z \sim 6$

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The properties of quasar host galaxies in the early universe provide insight into the early growth channels of the first supermassive black holes (SMBHs). We present a spectral analysis of two quasar host galaxies at $z \sim 6$ using JWST/NIRSpec, in which strong Balmer absorption lines are detected on top of the quasar emission. These two targets were originally discovered by the wide-field Subaru HSC-SSP survey, which is sensitive to the relatively low-luminosity quasar population at high redshift. Spectroscopic decomposition of the quasar and host galaxy light is performed to extract the rest-frame optical stellar emission, and to analyze the galaxy spectral energy distributions (SEDs) by jointly fitting galaxy SED models to the observed NIRCам photometry and NIRSpec spectroscopic data. We find that the stellar populations are characterized by single starburst events approximately 250 Myr ago lasting for 150 Myr. Both galaxies are fairly massive with stellar masses $M_* \sim 10^{11} M_\odot$, indicating that they are progenitors to the massive quiescent galaxies known in the lower-redshift universe. These post-starburst quasar host galaxies are thus in contrast to the host galaxies of more luminous quasars, for which rest-FIR studies with ALMA show high star-formation rates of 100–1000 M_\odot/yr . In our presentation, we will also discuss the time evolution of the SMBH - host co-evolution, as well as ongoing JWST Cycle 2 observations for one of the targets in this study.