

X68a A Wide and Deep Exploration of Radio Galaxies with Subaru HSC (WERGS): Extended Catalog for LBG Selection

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High-redshift radio galaxies (HzRGs; $z \geq 1$), being massive, distant, and radio-loud, have been suggested both observationally and theoretically to provide a key link to early black hole growth and AGN activity. However, the number of known HzRGs, especially those at $z \geq 4$, remains limited due to challenges in identification methods, as well as the optical depth and sensitivity of previous surveys. With advanced observational instrumentation, the Subaru Hyper Suprime-Cam (HSC), with its wide and deep survey capabilities, now enables more effective discovery of HzRGs. In this study, we expand the HzRG sample as part of the Wide and Deep Exploration of Radio Galaxies with Subaru/HSC (WERGS) project by cross-matching the final Subaru HSC-SSP data release, S23B, with the latest radio catalogs, VLA-FIRST, LoTSS DR2, and VLASS Epoch 2, obtaining the widest and deepest survey coverage among established WERGS catalogs, reaching up to ~ 1200 deg². We identify candidates via Lyman break techniques (g -/ r -/ i -/ z - dropouts), reaching redshifts up to $z \sim 7$, entering the epoch of reionization. We investigate the variation in number density across cross-matched catalogs as a function of expected redshifts, to study constraints on radio galaxy evolution. We also analyze the spectral index of dropout candidates and compare them with UNIONS-VLASS results to identify previously missed sources in traditional ultra-steep spectrum selection methods.