X29a Discovery of a z = 4.7 radio galaxy without an ultra-steep spectrum

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We will present the discovery of $z = 4.7$ radio galaxies without using the ultra-steep spectrum (USS) method, but using the Lyman break technique with Subaru HSC images for HSC counterparts of VLA FIRST sources. HzRGs are essential objects to study radio luminosity functions in the early universe, which allow us to understand the cosmic evolution of AGNs and galaxies. However, HzRGs are declined to high-z, and thus the number of known HzRGs are quite small. Moreover, our method does not require the ultra-steep spectral indices in the radio and provide us more uniform radio galaxy sample in high-z universe. Our survey for HzRGs, part of a Wide and Deep Exploration of Radio Galaxies with Subaru HSC (WERGS) project (Yamashita et al. 2018), employed the Lyman break technique for HSC counterparts of FIRST radio sources. The follow-up optical spectroscopy with Gemini/GMOS presents a clear Lyman alpha emission line and a Lyman break feature at $z = 4.7$. This discovery of the non-USS HzRG demonstrates the feasibility of our on-going survey for HzRGs without the bias of radio spectral indices.