X07a A Wide and Deep Exploration of Radio Galaxies with Subaru HSC (WERGS). II. Physical Properties derived from the SED Fitting with Optical, Infrared, and Radio Data

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We present physical properties of radio galaxies (RGs) with $f_{1.4\mathrm{GHz}} > 1$ mJy discovered by Subaru Hyper Supreme-Cam (HSC) and VLA FIRST survey. For 1056 FIRST RGs at $0 < z \leq 1.7$ with HSC counterparts in $\sim$100 deg^2, we compiled multi-wavelength data of optical, infrared (IR), and radio (150 MHz). We derived their color excess ($E(B-V)_*$), stellar mass (M_*), star formation rate (SFR), IR luminosity, the ratio of IR and radio luminosity (q_{IR}), and radio spectral index (α_{radio}) that are derived from the SED fitting with `CIGALE`. We estimated Eddington ratio based on M_* and integration of the best-fit SEDs of AGN component. We found that $E(B-V)_*$, SFR, and IR luminosity clearly depend on redshift while stellar mass, q_{IR}, and α_{radio} do not significantly depend on redshift. Since optically-faint ($i_{\mathrm{AB}} \geq 21.3$) RGs that are newly discovered by our RG survey tend to be high redshift, they tend to not only have a large dust extinction and low stellar mass but also have high SFR and AGN luminosity, high IR luminosity, and high Eddington ratio compared to optically-bright ones. The physical properties of a fraction of RGs in our sample seem to differ from a classical view of RGs with massive stellar mass, low SFR, and low Eddington ratio, demonstrating that our RG survey with HSC and FIRST provides us curious RGs among entire RG population (Toba et al. 2019b, ApJS, in press.).