

## X31a The eROSITA Final Equatorial-Depth Survey (eFEDS): A multiwavelength view of WISE mid-infrared galaxies/active galactic nuclei

Yoshiki Toba (NAOJ), Teng Liu (MPE), Tanya Urrutia (AIP), Mara Salvato (MPE), Junyao Li (USTC), Yoshihiro Ueda (Kyoto Univ.), and eROSITA–HSC AGN collaboration

We present the physical properties of mid-IR galaxies/AGN at  $z < 4$  in the 140 deg<sup>2</sup> fields observed by SRG/eROSITA using the PV phase program (eFEDS). By cross-matching the WISE 22  $\mu\text{m}$  (W4)-detected sample and the eFEDS X-ray point-source catalog, we find that 693 objects are detected by eROSITA. We have compiled a multi-wavelength dataset extending from X-ray to far-IR wavelengths. We have also performed (i) an X-ray spectral analysis, (ii) SED fitting using X-CIGALE, (iii) 2D image-decomposition analysis using Subaru HSC images, and (iv) optical spectral fitting with QSFit to investigate the AGN and host galaxy properties. For 7,707 WISE 22  $\mu\text{m}$  objects that are undetected by eROSITA, we have performed an X-ray stacking analysis to examine the typical physical properties of these X-ray faint and probably obscured objects. We find that (i) 82% of the eFEDS–W4 sources are classified as X-ray AGN with  $\log L_X > 42 \text{ erg s}^{-1}$ ; (ii) 67% and 24% of the objects have  $\log(L_{\text{IR}}/L_{\odot}) > 12$  and 13, respectively; and (iii) the relationship between the Eddington ratio and  $N_{\text{H}}$  for the eFEDS–W4 sample and a comparison with a model prediction from a galaxy-merger simulation indicates that approximately 5.0% of the eFEDS–W4 sources in our sample are likely to be in an AGN-feedback phase, in which strong radiation pressure from the AGN blows out the surrounding material from the nuclear region (Toba et al. 2022, A&A, 661, A15).