R29a An empirical estimation of far-Infrared SED of Near-by Galaxies

○永田　洋久、芝井　広 (名大理)、竹内　努 (国立天文台)、尾中　敬 (東大理)

We propose a new empirical method to estimate the total far-infrared fluxes of galaxies from the SED at wavelength shorter than 100 μm . The total far-infrared luminosity is one of the most important properties of galaxies. However, it is difficult to derive the total far-infrared fluxes of galaxies only from the *IRAS* data. As is well known, the SED peaks usually locate at wavelength longer than 100 μm , where *IRAS* has no photometric band. According to Okumura et al. (1999) and Shibai et al. (1999), the SED of the Galactic plane at wavelength longer than 100 μm can be derived from the color of 60 μm/100 μm. We have improved their empirical SED models to obtain a better fit for the Galactic plane data showing higher the color of 60 μm/100 μm than 0.6. Next, we have applied the present empirical model to the 68 *IRAS* galaxies for which *ISO*/ISOPHOT and KAO data are available at wavelength longer than 100 μm, and found the majority of them can be fit with the present empirical SED model. Moreover, we can derive the SED at wavelength longer than 100 μm from the flux densities at 60 and 100 μm with this model. In case of the 68 *IRAS* galaxies, the average error of the total flux thus obtained to that derived from all photometric data was 19%. Therefore, the uncertainty in the total far-infrared flux of the present method can be estimated to be about 20 %. We found the present method is remarkably more accurate than the previous one in deriving the total infrared flux from the *IRAS* 60, 100 μm data.