X13a **Evolution of mid-infrared galaxy luminosity functions from the entire AKARI NEP-Deep field with new CFHT photometry**

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We present infrared galaxy luminosity functions (LFs) in the AKARI North Ecliptic Pole (NEP) deep field using recently-obtained, wider CFHT optical/near-IR images. AKARI has obtained deep images in the mid-infrared (IR), covering 0.6 deg^2 of the NEP deep field. However, our previous work was limited to the central 0.25 deg^2 due to the lack of optical coverage. We recently obtained CFHT optical and near-IR images over the entire AKARI NEP deep field, which allowed us to fully exploit the precious space-based mid-infrared data.

AKARI's deep, continuous filter coverage in the mid-IR (2.4, 3.2, 4.1, 7, 9, 11, 15, 18, and 24μm) exists nowhere else, due to filter gaps of ISO, Spitzer and WISE. Restframe 8μm and 12μm luminosities are estimated without using a large extrapolation based on spectral energy distribution (SED) fitting, which was the largest uncertainty in previous studies. Total infrared luminosity (TIR) is also obtained more reliably due to the superior filter coverage. The resulting restframe 8μm, 12μm, and TIR LFs at $0.15 < z < 2.2$ are consistent with previous works, but with much reduced uncertainties, especially at the high luminosity-end, due to the larger field coverage. In terms of cosmic infrared luminosity density ($\Omega_{\rm IR}$), we found that the $\Omega_{\rm IR}$ evolves as $\propto (1+z)^{4.2\pm0.4}$.