

W21b **SAFARI: A FIR imaging spectrometer for SPICA**

土井 靖生 (東大総文), Swinyard, B., Griffin, D. (RAL), Isaak, K. (Cardiff Univ.), Goicoechea, J. (CAB-CSIC), 中川 貴雄, 松原 英雄, 松浦 周二 (宇宙航空研究開発機構), 川田 光伸 (名大理), and the SAFARI consortium

We present an outline of a FIR instrument to be onboard the next-generation infrared space telescope, SPICA.

SAFARI – SpicA FAR-infrared Instrument – is an imaging spectrometer with both spectral and photometric capabilities covering the 33–210 μm waveband. Predicted performance of the instrument are: **spatial resolution** 3.6–11.5 arcsec, **field of view** 2×2 arcmin, **spectrum resolution** $R = 2000$ @ 100 μm , **photometric sensitivity** 30–100 μJy (5σ , 1hour), **line sensitivity** $\text{few} \times 10^{-19} - 10^{-18} \text{ W/m}^2$ (5σ , 1hour).

These wide-field, high-spatial-resolution, and high-sensitivity capability of SAFARI overwhelming those of all the other precursor missions including AKARI, Spitzer, and Herschel will enable us to explore completely new aspect of the FIR astronomy: photometric/spectroscopic observation of distant galaxies up to $z \sim 1$ and diagnosing those physical/chemical conditions, spatially-resolved imaging of near-by Vega-like disks and those "snow-line", exoplanets transit studies, etc. We highlight the core science justification for the instrument being studied by a consortium of European, Canadian and Japanese institutes, supported by JPL.

Technical challenges that need to be met in order to realize the full potential of the instrument, including proposed provision of Japanese high-performance FIR detector ($\text{NEP} = \text{few} \times 10^{-18} \text{ W/Hz}^{1/2}$) by utilizing AKARI heritage, are also described.