V241a The Current Status and Japanese Contributions to NASA FIR-Probe PRIMA

Hanae Inami (Hiroshima University), Tohru Nagao (Ehime University), Shuji Matsuura (Kwansei Gakuin University), Hidehiro Kaneda, Takuma Kokusho (Nagoya University), Issei Yamamura, Takao Nakagawa (ISAS/JAXA), Yao-Lun Yang (RIKEN), Takuya Hashimoto (University of Tsukuba), PRIMA-Japan Team

NASA Far-Infrared Probe PRIMA is a cryogenically-cooled (4.5 K) far-infrared observatory with a 1.8m aperture, which is to be launched in 2031. It has been selected as the Far-Infrared Probe for the Step 1 selection in Oct 2024, and the final selection versus the X-ray Probe is scheduled in 2026. PRIMA has a continuous wavelength coverage from 24μm to 235μm with imaging and spectroscopy, as well as 96–235μm for polarimetry. The sensitivities of imaging and spectroscopy will be improved by factors of at least 10 and 100, respectively, compared to the previous far-infrared observatory, Herschel, from $>$ 10 years ago. In addition, PRIMA is unique in its fast survey speed, which is over 1000 times faster than Spitzer and Herschel. These capabilities will enable us to address important areas identified by the Astro2020 Decadal Survey, such as the origin of planets and their atmospheres, co-evolution of galaxies and supermassive black holes, the buildup of dust and metals, and more. Japan has a strong heritage in far-infrared observations and instrumentation, thanks to IRTS, AKARI, and SPICA. PRIMA provides an ideal opportunity for the Japanese community to exploit these assets and make significant contributions to PRIMA, both scientifically and technically. In this talk, we will describe the current status of PRIMA and the plan for Japanese contributions to the mission.