[구 AT-03] Development Status of the SPICA/FPC

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The SPICA (SPace Infrared Telescope for Cosmology & Astrophysics) project is a next-generation infrared space telescope optimized for mid- and far-infrared observation with a cryogenically cooled 3m-class telescope. Owing to unprecedented sensitivity and high spatial resolution, the focal plane instruments are expected to perform the confusion-limited observation. The SPICA will challenge to reveal many astronomical key issues from the star-formation history of the universe to the planetary formation.

The Korean 5contribution to SPICA as an international collaboration is the development of the near-infrared instrument, FPC (Focal Plane Camera). The Korean consortium for FPC proposed a key system instrument for the purpose of a fine guiding (FPC-G) complementing the AOCS (Attitude and Orbit Control System). The back-up instrument of FPC-G, FPC-S will be responsible for the scientific observations as well. Through the international review process, we have revised the scientific programs and made the feasibility study for the fine guiding system. Here, we report the current status of SPICA/FPC project.

[구 AT-04] Conceptual Design Study of NISS onboard NEXTSat-1

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The NISS (Near-infrared Imaging Spectrometer for Star formation history) onboard NEXTSat-1 is being developed by KASI. The NISS will perform the imaging low-resolution spectroscopic observation in the near-infrared range for nearby galaxies, low background regions, starforming regions and so on.

The off-axis reflecting telescope with a wide field of view (2 deg. x 2 deg.) will be operated in the wavelength range from 0.95 to 3.8μm. In order to reduce thermal noise, a telescope and a HgCdTe infrared sensor will be cooled down to 200K and 80K, respectively. To evade a stray light outside a field of view and use limited space efficiently, the NISS adopted the off-axis reflective optical system. The primary and secondary mirrors, optomechanical part and mechanical structure were designed to use the same material. It will lessen the degradation of optical performance due to a thermal variation. The purpose of NISS is the observation of cosmic near-infrared background in the wide wavelength range as well as the detection of near-infrared spectral lines in nearby galaxies, cluster of galaxies and star forming regions. It will give us less biased information on the star formation history. In addition, we will demonstrate the space technologies related to the development of the Korea's leading near-infrared instrument for the future large infrared telescope, SPICA.