

[초AT-01] Progress Report on NISS onboard NEXTSat-1

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

After the System Requirement Review, the optical design is changed from on-axis to the off-axis telescope which has a wide field of view (2 deg. x 2 deg.) as well as the wide wavelength range from 0.95 to 3.8 μ m. The mechanical structure is considered to endure the launching condition as well as the space environment. The design of relay optics is optimized to maintain the uniform optical performance in the required wavelength range. The stray light analysis is being made to evade a light outside a field of view. The dewar is designed to operate the infrared detector at 80K stage. From the thermal analysis, we confirmed that the telescope can be cooled down to around 200K in order to reduce the large amount of thermal noise. Here, we report the current status of the NISS development.

[구AT-02] First Light of the MIRIS, a Compact Wide-field Space IR Telescope

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The MIRIS (Multi-purpose InfraRed Imaging System) is a compact IR space Telescope, which has been developed by KASI since 2008 as the main payload of Korean STSAT-3. It was launched successfully by a Dnepr Rocket at Yasny Launch site, Russia in November 2013. After the launch, the STSAT-3 successfully settled down at Sun synchronous orbit with altitude of \sim 600km. Communications were regularly made between the ground station and the MIRIS with other secondary payload. We made a series of tests of the MIRIS during the verification period and found that all functions including the passive cooling are working as expected. The MIRIS has a wide-field of view 3.67 X 3.67 degrees and wavelength coverage from 0.9 to 2.0 micro-meter with the angular resolution of 51.6 arcsec. The main science missions of the MIRIS are (1) mapping of the Galactic plane with Paschen-alpha line (1.88 micro-meter) for the study of warm interstellar medium and (2) the measurement of large angular fluctuations of cosmic near infrared background radiation with I (1.05 micro meter) and H (1.6 micro meter) bands to identify their origin. We present the results of MIRIS initial operation in this paper.