The next-generation infrared space mission SPICA

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We present an overview of the SPICA (Space Infrared Telescope for Cosmology and Astrophysics) mission, which is an astronomical mission optimized for mid- and far-infrared astronomy with a cryogenically cooled 3.2 m telescope. Its high spatial resolution and unprecedented sensitivity in the mid- and far-infrared will enable us to address a number of key problems in present-day astronomy, ranging from the star-formation history of the universe to the formation of planets. Since SPICA is a mission with very low background radiation, it is most suitable for observational studies of thermal emission of cosmic dust in the mid- and the far-infrared.

To reduce the mass of the whole mission, SPICA will be launched at ambient temperature and cooled down on orbit by mechanical coolers on board with an efficient radiative cooling system, a combination of which allows us to have a 3.2m, cooled (6 K) telescope in space with moderate total weight (3.7t).

SPICA is proposed as a Japanese-led mission together with extensive international collaboration. The most important international partner is ESA. The assessment study on the European contribution to the SPICA project has started under the framework of the ESA Cosmic Vision 2015-2025. Korea and Taiwan also join the project. US participation is under discussion.

The target launch year of SPICA is FY2022