
JASMINE: near-infrared space astrometry mission for explorations of the Galactic nuclear region

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Abstract

JASMINE is a satellite mission to perform infrared astrometric observations in the direction of the Galactic nuclear region. JASMINE was selected by ISAS/JAXA for the JAXA Competitive Middle-Class Science Missions No.3. This mission is unique in that the same astronomical object can be observed frequently in the near-infrared band, in which the effect of absorption by dust is weak. JASMINE uses an infrared camera under development in Japan to observe in the H_w band of wavelengths from 1.0 microns to 1.6 microns. JASMINE will determine parallaxes (proper motions) accurate to between $25 \mu\text{as}$ and $125 \mu\text{as}$ ($125 \mu\text{as}/\text{y}$), depending mainly on the star magnitude. This mission will help to achieve breakthroughs in the formation history of the Galactic nuclear structures (Galactic Center Archeology). In terms of understanding our Galaxy's structure, and its formation and evolution, the Galactic nuclear region is particularly important region because stars of various ages have different spatial distributions and motions according to their ages in this region. JASMINE will also be useful for exploring dark matter, black holes, X-ray binary star systems, and stellar clusters, in the inner region along the Galactic plane. The overview and recent progress of JASMINE will be explained.

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