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New method for astrometric measurements in Space Mission, JASMINE

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Abstract. We present a new method for measuring positions of stars in the Milky Way Galaxy by astrometric satellite, JASMINE, which is in progress at the National Astronomical Observatory of Japan. JASMINE is the acronym of the Japan Astrometry Satellite Mission for Infrared (z-band : 0.9 micron) Exploration, and is planned to be launched around 2015 The main objective of JASMINE is to study the fundamental structure and evolution of the bulge components of the Milky Way Galaxy. In order to accomplish these objectives, JASMINE will measure trigonometric parallaxes, positions and proper motions of about a few million stars during the observational program, with the precision of 10 microarcsec at $z = 14$mag. The telescope of JASMINE has just one field of view, which is different from other astrometric satellites like Hipparcos and GAIA, that have two fields of view with large angle. These satellites, Hipparcos and GAIA, scan along the great circle with the spin axis perpendicular to both two fields of view to estimate the relative positions of stars on the great circle. They scan many different great circles to observe all the sky. On the other hand, JASMINE will take overlapping fields of view without any gaps to survey an area of about 20deg×10deg. Accordingly survey area covers the region of about 20deg×10deg in the bulge component. JASMINE will continue the above procedure for observing the area during the mission life. As a consequence, JASMINE will observe the restricted regions around the Galactic bulge and sweep repeatedly. The mission life is planned to be 5 years.

Key words. astrometry — space vehicles: instruments — techniques: high angular resolution — methods: data analysis — methods: statistical

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