Mem. S.A.It. Vol. 77, 1190

Memorie della

JASMINE simulator

Y. Yamada[1], N. Gouda[2], T. Yano[2], N. Sako[3], Y. Hatsutori[3], T. Tanaka[3], and M. Yamauchi[4]

[1] Department of Physics, Kyoto University, Oiwake-cho Kita-Shirakawa Sakyo-ku Kyoto 606-8502, Japan, e-mail: yamada@scphys.kyoto-u.ac.jp
[2] National Astronomical Observatory of Japan, Osawa 2-21-1, Mitaka, Tokyo 181-8585, Japan
[3] Department of Aerospace Engineering, Graduate School of Engineering, TheUniversity of Tokyo, Hongo 7-3-1, Bunkyo-ku, Tokyo 113-8656, Japan
[4] Department of Astronomy, Graduate School of Science, The University of Tokyo, Hongo 7-3-1, Bunkyo-ku, Tokyo 113-0033, Japan

Abstract. We explain simulation tools in JASMINE project(JASMINE simulator). The JASMINE project stands at the stage where its basic design will be determined in a few years. Then it is very important to simulate the data stream generated by astrometric fields at JASMINE in order to support investigations of error budgets, sampling strategy, data compression, data analysis, scientific performances, etc. Of course, component simulations are needed, but total simulations which include all components from observation target to satellite system are also very important. We find that new software technologies, such as Object Oriented(OO) methodologies are ideal tools for the simulation system of JASMINE(the JASMINE simulator). The simulation system should include all objects in JASMINE such as observation techniques, models of instruments and bus design, orbit, data transfer, data analysis etc. in order to resolve all issues which can be expected beforehand and make it easy to cope with some unexpected problems which might occur during the mission of JASMINE. So, the JASMINE Simulator is designed as handling events such as photons from astronomical objects, control signals for devices, disturbances for satellite attitude, by instruments such as mirrors and detectors, successively. The simulator is also applied to the technical demonstration "Nano-JASMINE". The accuracy of ordinary sensor is not enough for initial phase attitude control. Mission instruments may be a good sensor for this purpose. The problem of attitude control in initial phase is a good example of this software because the problem is closely related to both mission instruments and satellite bus systems.

Key words. Astrometry: mission – Astrometry: JASMINE – Galaxy: structure

Send offprint requests to: Y. Yamada