the trajectory to the moon is consisted of the Earth departure loop trajectory and the Translunar trajectory. This method is useful not only to reduce the gravity losses but also to check the condition of satellite. By using this method, this paper demostrates the optimized trajectory from Earth parking orbit to lunar mission orbit which minimizes the fuel, and the SNOPT (Sparse Nonlinear OPTimizer software) is used to find optimal solution. Also, this paper provides lunar mission profile which includes the mission schedule when TLI, LOI (Lunar Orbit Insertion) maneuvers occur, a mount of fuel when thruster is used and other mission parameters.

[II-2-2] Geostationary Transfer Orbit Mission Analysis Software Development

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The Korean first geostationary meteorological satellite, COMS, will be launched during second half of 2009. For the next meteorological geostationary satellite mission, KARI is now preparing the development process and tools. As one of the endeavor, a software tool is being developed for the analysis and design of geostationary transfer orbit. Generally, these kind of tools should be able to do various analysis works like apogee burn planning, dispersion analysis, ground visibility analysis, and launch window analysis etc. In this presentation, a brief introduction about a design process and analysis software tool development. And simulated calculation results are provided for the geostationary transfer orbit. These software can be used for the next geostationary satellite mission design and development.

[II-2-3] YLPODS performance test using SLR data

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YLPODS (Yonsei Laser-ranging Precise Orbit Determination System) is POD system using SLR (Satellite Laser Ranging) data. YLPODS is developed for two main purposes. The first purpose is to verify the result of POD using GPS data. The second purpose is to perform POD using only SLR data. In this study, YLPODS performance test is presented for checking the reliability of POD using only SLR data. To perform POD, the information of CHAMP and TOPEX mission is applied and SLR NP (Normal Point) data is used. The test is performed by checking both range precision and 3D accuracy (radial, along, cross direction). To confirm of 3D accuracy, CHAMP GENESIS orbit and TOPEX JPL orbit of NASA are used.

[II-2-4] Development of a Preliminary Formation-Flying Testbed for Satellite Relative Navigation and Control

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This research develops a GPS-based formation-flying testbed (FFTB) for formation navigation and control. The FFTB is a simulator in which spacecraft simulation and modeling software and loop test capabilities are integrated for test and evaluation of spacecraft navigation and formation control technologies. The FFTB is composed of a GPS measurement simulation computer, flight computer, environmental computer for providing true environment data and 3D visualization computer. The testbed can be simulated with one to two spacecraft, thus enabling a variety of navigation and control algorithms to be evaluated. In a formation flying simulation, GPS measurement are generated by a GPS measurement simulator to produce pseudorange, carrier phase measurements, which are collected and exchanged by the flight processors and subsequently processed in a navigation filter to generate relative and/or absolute state estimates. These state estimates are the fed into control algorithm, which are used to generate maneuvers required to maintain the formation. In this manner, the flight processor also serves as a test platform for candidate formation control algorithm. Such maneuvers are fed back through the controller and applied to the modeled truth trajectories to close simulation loop. Currently, The FFTB has a closed-loop capability of simulating a satellite navigation solution using software based GPS measurement, we move forward to improve using SPIRENT GPS RF signal simulator and space-based GPS receiver

[II-2-5] The Comparison of Numerical Integration Methods for the KASIOPEA, Part II

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The completion ('initiation' de facto) of the KASI Orbit Propagator and Estimator (KASIOPEA) has been delayed for several reasons unfortunately. Due to the lack of working staffs and the Division priority rearrangement, the initial plan was dismantled and ignored for many years. However,