



The Johns Hopkins University Applied Physics Laboratory (APL) organized the 24th International Symposium on Space Flight Dynamics (ISSFD) in May 2014. The ISSFD is a series of symposia sponsored by various space agencies, including APL, CNES, DLR/GSOC, ESA/ESOC, INPE, JAXA/ISAS, KIAM, NASA/GSFC, and JPL. It is intended to provide an international forum for specialists in the field of space flight dynamics, with an emphasis on operational activities and results.

Nearly 100 papers were presented in 5 days with topics on mission design, navigation, orbit determination, formation flying, flight operations, etc. I saw some interesting talks on the Mercury orbiter MESSENGER, BepiColombo, a Japanese asteroid flyby mission PROCYON, and a global optimization method for low-thrust trajectory optimization. My presentation is about the multi-objective optimization and system design of a JAXA mission candidate DESTINY. I demonstrated that the spacecraft mass and the initial orbit have significant impact to the propellant cost, flight time, and passage time in the radiation belt. I received some useful comments and feedback during the Q & A of my talk, which inspires me to improve the mathematical formulation the optimization problem in the future.

On the last day of the conference, the attendants joined a tour of the Applied Physics Laboratory. We were shown to the mission control room of MESSENGER and the Pluto flyby mission New Horizons. Unfortunately no photos are allowed to be taken during the tour so the photo below with the satellite models was only taken in the visitor's center.

Overall the conference is very fruitful for me to learn about the current status of research and missions in various space agencies in the world. In the conference, I saw some old friends and colleagues from Purdue University where we studied for our Ph.D. together in 2008. I also made some new contacts with staffs from APL and NASA-Goddard, who are doing research relevant to my current work on trajectory optimization and we agreed to collaborate developing an open source optimization toolbox for low-thrust trajectories.



Me at the 2014 ISSFD



Visitor's Center of APL



Conference site