Training Opportunity for Swiss Trainees

Reference	Title	Duty Station
CH-2019-OPS-OAP	Evaluation of the NASA-JPL SPICE Toolkit for FCT usage in test, verification and validation activities.	ESOC

Overview of the unit's mission:

The Plato operation unit is responsible for the preparation and execution of the mission operations activities on the PLAnetary Transits and Oscillations of stars (PLATO) mission. This is a typical ESA science missions with the Satellite procurement is conducted out of ESTEC, the Science Operations is conducted at ESAC and the instruments are delivered to the mission by the Plato Mission Consortium. The mission is due to be launched in 2026, however the satellite procurement and the operations preparation activities have already started.

Overview of the field of activity proposed:

NASA-JPL have made available online and as a toolkit for C, Fortran, IDL, Matlab (unofficially for Python) the SPICE toolkit.

The SPICE Concept is : The Navigation and Ancillary Information Facility (NAIF), acting under the directions of NASA's Planetary Science Division, has built an information system named "SPICE" to assist NASA scientists in planning and interpreting scientific observations from space-borne instruments, and to assist NASA engineers involved in modeling, planning and executing activities needed to conduct planetary exploration missions. The use of SPICE extends from mission concept development through the post-mission data analysis phase, including help with correlation of individual instrument data sets with those from other instruments on the same or on other spacecraft.

The activity would be to evaluate the usefulness of SPICE (in one of its toolkit supported environments C, Fortran, IDL, Matlab, Python) for the flight control teams in the astronomy division. Particularly utilities related to attitude pointing, instrument point, exclusion zone avoidance, antenna pointing, wheel management, event file generation, command file for use in for test and evaluation during both mission development and in-flight operations. During the familiarisation and evaluation of the toolkit it is expected that further areas of usefulness will become apparent and the student is encourage to further explore these possibilities.

The student should be familiar with computer systems and software, and with space system dynamics to be able to quickly utilise and evaluate the usefulness of SPICE.

Required education:

University undergraduate or post-graduate, in engineering, physics, mathematics.