



Exploration of Jovian Magnetosphere and Trojan Asteroids by a Solar Power Sail Mission

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Europa Jupiter System Mission (EJSM) is a proposed international mission to explore Jupiter, Jovian satellites and environment. EJSM consists of (1) The Jupiter Europa Orbiter (JEO) by NASA, (2) the Jupiter Ganymede Orbiter (JGO) by ESA, (3) the Jupiter Magnetospheric Orbiter (JMO) studied by JAXA. (4) The Europa lander is also studied by Roscosmos.

Together with plasma instruments on board JEO and JGO, JMO will investigate the fast and huge rotating magnetosphere to clarify the energy procurement from Jovian rotation to the magnetosphere, to clarify the interaction between the solar wind the magnetosphere. JMO will clarify the characteristics of the strongest accelerator in the solar system. JMO will investigate the role of Io as a source of heavy ions in the magnetosphere. Proposed instruments on board JMO are magnetometers, low-energy plasma spectrometers, medium energy particle detectors, energetic particle detectors, electric field / plasma wave instruments, a dust detector, an ENA imager, and EUV spectrometer.

JAXA is studying solar power sail for deep space explorations following the successful ion engine mission Hayabusa. This is not only solar sail (photon propulsion) but also include very efficient ion engines where electric power is produced solar panels within the sail. Currently we are studying a mission to Jupiter and one (or two) of Trojan asteroids, which are primitive bodies with information of the early solar system as well as raw solid materials of Jovian system. As the main spacecraft flies by Jupiter heading for an asteroid, it will deploy JMO spinner around Jupiter.