



Mercury Plasma/Particle Experiment (MPPE) onboard BepiColombo/MMO

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Mercury is one of the least explored planets in our solar system. No spacecraft has visited Mercury since Mariner 10 made three flybys two in 1974 and one in 1975. Though more than 30 years have passed since the Mariner-10 Mercury fly-bys, most aspects of Mercury remain unknown. In order to elucidate the detailed plasma structure and dynamics around Mercury, an orbiter BepiColombo MMO (Mercury Magnetospheric Orbiter) is planned to be launched in 2013 as a joint mission between ESA and ISAS/JAXA. Mercury Plasma/Particle Experiment (MPPE) was proposed for investigating the plasma/particle environment around Mercury. MPPE is a comprehensive instrument package for plasma, high energy particle and energetic neutral atom measurements. It consists of 7 sensors: two Mercury Electron (MEA1 and MEA2), Mercury Ion Analyzer (MIA), Mercury mass Spectrum Analyzer (MSA), High Energy Particle instrument for electron (HEP-ele), High Energy Particle instrument for ion (HEP-ion), and Energetic Neutrals Analyzer (ENA). With the Instrument PDR at the end of 2007, the development of MPPE sensors is accelerating. One of the important development items is the thermal design of the instrument. Each sensor should have its own thermal shield in order to minimize the thermal input and to maintain the sensor temperature within an acceptable range. In parallel with the development of the sensors, the detailed observation mode of MPPE sensors is under consideration. Since the expected telemetry rate is much lower than the total data rate generated by the sensors, integrated observation mode with all the MPPE sensors should be created.