

## Plasma wave investigation onboard the BepiColombo MMO mission

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In the Mariner10 encounters with Mercury in 1974, it was found that the planet has an internal magnetic field forming a magnetosphere through interaction with the solar wind. The observations of the plasma waves in the Mercury magnetosphere are very important in revealing thermalization and acceleration processes of plasmas in high beta plasma. Especially, the physics in the boundary region are very important, since the characteristic spatial scale such as Larmor radius, is very large relative to the scale of the magnetosphere. Further, the low frequency plasma waves are important in the pickup process of ions sputtered from the planetary surface. In order to study plasma wave phenomena in the Mercury magnetosphere, we propose the plasma wave observation system onboard the Mercury mission. The system mainly consists of 4 sets of different receivers and the digital processing unit. The onboard receivers observe both waveforms and FFT spectra in the frequency range from 0Hz to 3MHz for the electric field component and from 10Hz to 1MHz for the magnetic field component. The digital processing unit contains the DSP and CPU. Since the characteristic time scale of plasma phenomena taking place in the Mercury magnetosphere is expected to be much shorter than that in the terrestrial magnetosphere, the observation time resolution should be higher instead of the restrictions on the telemetry capacity. Therefore, the data compression and automatic data selection systems are very important, which are realized by the digital processing unit.