Study on the onboard software processing for the MMO-PWI

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MMO (Mercury Magnetospheric Orbiter) is one of the spacecrafts which explore Mercury. This project is a collaborative project between Japan and Europe. The main target of the MMO is Mercury's magnetosphere. PWI (Plasma Wave Investigation) is one of instruments onboard the MMO and it measures both electric and magnetic fields. In the present paper, we report the current status of the onboard software processing of PWI, especially EWO (EFD/WFC/OFA).

The digitized data from the electric and magnetic sensors received by the EWO are once stored in the onboard memories installed inside the digital processing unit (MDP), the CPU inside the MDP performs necessary processes such as FFT, averaging, data compression. In the OFA, we continuously produce spectrum data, storing wavedata from receivers in the memory installed in the MDP and transfering them to spectrum data in a short time. In the present paper, we estimate the CPU load for the OFA processing.

In addition, we are examining data compression algorithms for specrum data of WFC/OFA in order to make effective use of limited data transfer rate.