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Room:Convention Hall

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## Study on real-time polarization analysis

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The amount of raw data from the plasma wave instrument is increasing as the scientific objectives require covering a wide frequency ranges with high time and frequency resolution. Furthermore a variety of operation modes are needed to meet these scientific objectives. However, it is inevitable to reduce the amount of telemetry data because it is too huge to downlink all measured data to the ground. Onboard software plays a very important role because many kinds of operational modes can be implemented without changing the hardware configuration. We have developed several software receivers for spacecraft such as NOZOMI, KAGUYA and MMO and implemented lots of intelligent functions in them making use of digital signal processing technique.

In the present study, we investigated a signal processing method to derive polarization of plasma wave using onboard software. We evaluated computation load as well as accuracy of polarization parameters under severe restrictions on telemetry and computation resources in order to find a solution for implementation to onboard software. In the presentation, we introduce the evaluation results using the waveform data obtained by the AKEBONO and KAGUYA spacecraft.

Keywords: Plasma wave instruments, Polarization analysis, Onboard software, Magnetosphere, Signal Processing