Processing method of wave data in Wave-Particle Interaction Analyzer onboard ERG satellite

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The Wave-Particle Interaction Analyzer (WPIA) is a software function installed on the Exploration of energization and Radiation in Geospace (ERG) satellite. The WPIA directly measures the quantity of energy transfer between whistler-mode chorus waves and resonant energetic electrons by using plasma wave vectors and velocity vectors of plasma particles. In order to statistically evaluate the significance of the quantity of energy transfer, the WPIA require accurate phase angles of waves with certain frequency and resonant electrons. The waveform data of SWPIA data includes various wave mode except whistler-mode chorus which is main target of WPIA. The waveform data processing is important to obtain SWPIA result with larger S/N. We discuss applicative processing method to suppress the statistical error using wave-particle interaction reproduced in the simulation and application to onboard algorithm.