



Propagation properties of plasmaspheric hiss in the radiation belts: first systematic results from the Van Allen probes

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The electromagnetic emission of plasmaspheric hiss has been considered to be an important component in the puzzle of the dynamical behavior of Van Allen radiation belts, being held responsible for the slot region between the inner and outer belts. The origin of plasmaspheric hiss is still being debated. A systematic analysis of propagation properties of these waves can provide us with inputs for modeling of radiation belt dynamics.

We use new measurements of the Electric and Magnetic Field Instrument Suite and Integrated Science (EMFISIS) onboard the Van Allen Probes spacecraft. Multicomponent data processed by the EMFISIS/Waves instrument allow us to systematically estimate the wave polarization and propagation parameters. The survey data of this instrument are recorded with a nearly 100% coverage. This growing data set allows us to determine probability density functions of characteristics of electromagnetic waves in the typical frequency range of plasmaspheric hiss.

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