

Fine structure of plasmaspheric hiss

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Plasmaspheric hiss has been widely regarded as a broadband, structureless, incoherent emission. By examining burst-mode vector waveform data from the EMFISIS instrument on the Van Allen Probes mission,we show that plasmaspheric hiss is a coherent emission with complex fine structure. Specifically, plasmaspheric hiss appears as discrete rising tone and falling tone elements.

Our study comprises the analysis of two 1 hour samples,within which a total of eight 1 second samples were analyzed. By means of waveform analysis on two samples,we identify typical amplitudes ,phase profiles, and sweep rates of the rising and falling tone elements. The new observations reported here can be expected to fuel a reexamination of the properties of plasmaspheric hiss,including a further reanalysis of the generation mechanism for hiss.

Keywords: plasmaspheric hiss, Van Allen Probes, EMFISIS