



Survey of quasiperiodic emissions observed by the Van Allen Probes spacecraft

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Quasiperiodic emissions are whistler mode electromagnetic waves observed in the inner magnetosphere that exhibit a nearly periodic time modulation of the wave intensity. Their frequencies are usually between about 0.5 and 4 kHz, and periods of the intensity modulation are on the order of minutes. We perform a systematic survey of these emissions using the data measured by the two Van Allen Probes spacecraft. We identify not only the beginning and ending times of individual events, but also the beginning and ending times and frequencies of individual quasiperiodically occurring elements. This allows us to determine event modulation periods, and to investigate their dependence on relevant controlling parameters. Moreover, as multicomponent wave measurements are available, we evaluate wave polarization properties and propagation directions using frequency-time intervals forming the events. The obtained results are used to gather an overall picture of the event propagation throughout the inner magnetosphere.