

The Interaction of Ultra Low Frequency Pc 3-5 Waves with Charged Particles in Earth's Magnetosphere

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Abstract:

One of the most important issues in space physics is understanding the processes that transfer energy from the solar wind to energetic particle populations in Earth's inner magnetosphere. Ultra-low-frequency (ULF) waves are an important consideration as they propagate electromagnetic energy over vast distances with little dissipation and interact with charged particles via drift resonance and drift-bounce resonance. ULF waves also take part in magnetosphere-ionosphere coupling and thus play an essential role in regulating energy flow throughout the entire system. This review summarizes recent advances in the characterization of ULF Pc 3-5 waves in different regions of the magnetosphere, including ion and electron acceleration associated with these waves.