

Modeling of kinetic wave modes for various magnetospheric conditions at Jupiter

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Abstract

Jupiter's aurora has been subject of scientific interest for decades. The current JUNO mission investigates the magnetospheric environment of Jupiter and in particular its polar region, which has not been probed by previous spacecrafts. First observations have now revealed that the electron energization processes in the acceleration region of the main aurora are more complex than expected. Therefore we investigate wave-particle interactions by different dissipative and dispersive wave modes in the kinetic regime. These are thought to be an energization mechanism to power auroral electrons. We model the propagation properties of different wave modes by solving the hot plasma dispersion relation for various magnetospheric conditions at Jupiter and aim to find a suitable wave candidate for further investigation of stochastic acceleration processes.