Contributed Talk

Splinter Plasma

Wave particle interaction in Jupiter's magnetosphere: Comparison with JUNO observations of Jupiter's aurora

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The understanding of Jupiters aurora currently experiences a quantum leap due to the insitu particle and fields and the remote sensing measurements by the JUNO spacecraft. To help understand the associated magnetospheric acceleration processes, we investigate wave particle interactions, i.e., Landau and cyclotron damping, in Jupiter's magnetosphere for electrons, sulfur, oxygen and hydrogen ions. Therefore we calculate kinetic length and temporal scales, which we cross-compare for various regions within Jupiter's magnetosphere. Based on these scales, we investigate the roles of possible wave particle mechanisms in each region, e.g., Jupiter's plasma sheet, the auroral acceleration region and the polar ionosphere. We thereby consider that the magnetospheric regions are coupled through convective transport, and Alfven and other wave modes. We particularly focus on the role of stochastic acceleration by kinetic Alfvn waves in contributing to Jupiter's aurora.