

Auroral signatures of energetic processes in the magnetospheres of Jupiter and Saturn

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Abstract

In our presentation we will give an overview of auroral phenomena and their relationship to energetic particle distributions in the magnetospheres of Jupiter and Saturn. At Jupiter and Saturn a wealth of different auroral phenomena, ranging from quasi-steady state ovals to transient, small scale features have been observed. These auroral features are generally accompanied by particular energetic particle distributions in the planetary magnetospheres and are also imprints of various magnetospheric processes. We will present in-situ observations of several different energetic particle distributions including electron and ion beams and discuss their physical relationship to field-aligned currents, Alfvénic and compressible magnetic field perturbations, and adiabatic compression/expansion. Some of these processes are ultimately driven by flux-tube interchange events, reconnection or satellite interactions.