



Observation and interpretation of energetic ion conics in Jupiter's polar magnetosphere

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Conical energetic proton distributions observed by Juno's energetic particle detectors (JEDI) at low altitudes (< 6 RJ) over Jupiter's northern polar region suggest transverse (to the local magnetic field lines) acceleration of H⁺ on field lines beneath the spacecraft. Proton conics were observed within a broad region characterized by upward beaming electrons and accompanied by broadband low-frequency waves and trapped magnetospheric protons and heavy ions. The characteristic energies associated with these ion conics are ~ 100 times greater than those associated with similar distributions observed in the Earth's auroral region, and similar in energy to those observed at Saturn. The ion conics also exhibited pitch angle dispersion with time that is thought to be indicative of the source location. Mapping these distributions along magnetic field lines between the spacecraft and the ionosphere suggests that the source region occupies altitudes between ~ 3 -5 RJ. These new observations of accelerated ions over the polar region of Jupiter opens new areas for comparative planetary auroral physics.