

## **Energetic proton and heavy ion observations over Jupiter's main auroral and polar cap regions**

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### **Abstract**

Proton and heavy ion observations from Juno's energetic particle instrument, JEDI, reveal a host of processes occurring near the main auroral oval and in regions poleward of the oval. Some of the first studies from [1,2,3,4] showed evidence for precipitating energetic heavy ions into Jupiter's atmosphere as well as magnetic field-aligned electric potentials accelerating protons and heavier ions to several MeV and energetic proton conics formed by the "pressure cooker" effect. More recent observations from the previous twelve auroral passes (PJ1-PJ12) continue to show clear examples of MV electric potentials and energetic proton conics – giving us the ability to further characterize these processes. Additionally, recent analysis also reveals the presence of upward beaming heavier ions with energies extending well into the 100s of keV and MeV with angular profiles consistent with that of the proton conics. How these energetic heavier ions, such helium, oxygen and sulfur, are entrained in this physical process is explored. In this presentation, we will also discuss some recent examples of large-scale MV

electric-potential structures over the polar cap region.

### **References**

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