



## **Acceleration of ions in Jovian plasmoids: does turbulence play a role?**

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The dissipation processes which transform electromagnetic energy into kinetic particle energy in space plasmas are still not fully understood. Of particular interest is the distribution of the dissipated energy among different species of charged particles. The Jovian magnetosphere is a unique laboratory to study this question because outflowing ions from the moon Io create a high diversity in ion species. In this work, we use multi-species ion observations and magnetic field measurements by the Galileo spacecraft. We limit our study to observations of plasmoids, because there is strong ion acceleration in these structures. Our model predicts that electromagnetic turbulence in plasmoids plays an essential role in the acceleration of oxygen, sulfur and hydrogen ions. The observations show a decrease of the oxygen and sulfur energy spectral index  $\gamma$  at  $\sim 30$  to  $\sim 400$  keV/nuc with the wave power indicating an energy transfer from electromagnetic waves to particles, in agreement with the model. However, this is not observed for hydrogen ions, implying that processes other than wave-particle interaction are more important for the acceleration of these ions or that the resolution of the observations is too coarse. The results are expected to be confirmed by improved plasma measurements by the Juno spacecraft.