



Plasma Heating via Injection and Circulation at Saturn.

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Abstract

At Saturn small scale plasma injection is prolific in the radial range $5 < L < 10$. In earlier work we showed that heating via a radial circulation pattern of inward injection and drift creates a hot electron component superposed throughout this range (Rymer et al., 2008). In this presentation we extend those ideas to explore whether an azimuthal heating pattern operates outside $L \sim 10$ via 'magnetic pumping' an idea developed by Goertz (1978) for Jupiter. We test the model using Cassini electron pitch angle measurements at Saturn.

References

- Rymer, A. M., B. H. Mauk, T. W. Hill, C. Paranicas, D. G. Mitchell, A. J. Coates, and D. T. Young (2008), Electron circulation in Saturn's magnetosphere, *J. Geophys. Res.*, 113, A01201, doi:10.1029/2007JA012589.
Goertz, C. K. (1978) Energization of charged particles in Jupiter's outer magnetosphere, *J. Geophys. Res.*, 83, 3145.

