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Plasma structures in the Enceladus plume

I. Engelhardt (1,2), A. I. Eriksson (1), J.-E. Wahlund (1), M. Morooka (2,3), and S. Sakai (1,4)
(1) Swedish Institue of Space Physics, Uppsala, Sweden
(2) Department of Physics and Astronomy, Uppsala University, Sweden
(3) Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University, Sendai, Japan
(4) Department of Cosmosciences, Hokkaido University, Sapporo, Japan

Abstract

The Cassini flybys of Enceladus have provided a wealth of data on the plume from the south polar region of this icy moon of Saturn. We have used the high resolution probe current measurements from the Langmuir probe of the Radio and Plasma Wave Science instrument to study plasma structures in this region down to kilometer scale. While there is a general correlation to the inferred dust and gas jets at large scales, we intepret the smallest scale structures we find as the result of plasma processes and the interaction with the surrounding magnetosphere of Saturn. Evidence for this is the observed variation of plasma structuring with altitude and signatures of filamentation in regions of high density gradient.