
JOURNAL CLUB

The Aurora as a Source of
Radiation Belt Electrons

by

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ABSTRACT

The visual aurora takes on a bewildering variety of forms from the very thin structures to the broad homogeneous arcs to the diffuse glow and everything in between. We can make some sense of this if we assume that there is a single acceleration process that generates a narrow, field-aligned electron beam producing the discrete aurora. The majority of the accelerated electrons are scattered into semi-trapped orbits. The other auroral forms are then a consequence of rapid pitch-angle diffusion. Eventually the number of semi-trapped electrons drops to the point that they will no longer sustain the instability that is responsible for rapid pitch angle diffusion. At this point the remaining electrons are trapped.

This talk presents preliminary results in an attempt to model this process using a transport code. It is found that the model can account for the auroral decay time resulting from an isolated substorm expansion.

Friday, April 19
Elvey Bldg. Globe Room
3:45 pm