

## **M-I COUPLING AND AURORAL STRUCTURING ON SMALL SCALES**

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Observations from particle and fields instrumentation on polar orbiting spacecraft in recent years have provided measurements which have resolved in great detail the transverse (to the geomagnetic field) structure of the auroral acceleration region. The interpretation of these measurements have been performed under the implicit assumption that these structures are uniform transverse to the spacecraft trajectory which is mostly in the east-west direction. While this assumption is applicable on large scales and to quiet time auroral arcs it is often not appropriate during active times and on smaller scales where the most intense auroral particle acceleration occurs. In this presentation we exploit observations from the FAST and Reimei spacecraft to explore the structuring of small-scale aurora and how this is related to electron and ion acceleration processes through the action of Alfvén waves. This work is in part facilitated through the use of a 3-D reduced MHD simulation which provides a model for the evolutionary processes occurring along the plane of the auroral current sheet (east-west direction) and allows energy transport across scales to sustain the acceleration processes.

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