NEW OBSERVATIONAL PERSPECTIVES ON AURORAL ARCS

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We do not know how auroral arcs are formed, whether or not there are different types of arcs (meaning different underlying physics), nor what they correspond to in the magnetosphere. Given the ubiquity of arcs and their obvious importance to MI coupling and to specific processes such as the substorm, resolving the questions we have about arcs is one of the key objectives in space physics. In this talk I will survey recent observations that I believe are important to our ultimate understanding of arcs. These include the differences between meso-scale (~10 km) and small-scale arcs, the orientation of arcs in general and during the late growth phase, the longitudinal extension of arcs across many hours of local time, the fact that arcs occur poleward of the ion isotropy boundary, ever-present waves that propagate azimuthally along arcs, and the fact that some arcs oscillate and others do not. I will finish with a brief discussion of how these observations relate to theories of arc formation.

Aurora, Magnetosphere-Ionosphere Coupling, Substorm

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