Abstract Submitted
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Explaining Signatures of Auroral Arcs based on the Stationary Inertial Alfven Wave[1] SH NOGAMI, ME KOEPKE, WVU, DJ KNUDSEN, DM GILLIES, E DONOVAN, Univ. Calgary, S VINCENA, UCLA — Optical emission data from the THEMIS array of All Sky Imagers are analyzed to determine the lifetime of an auroral arc (i.e., the elapsed time during which an arc is visible). Lifetime is an important temporal signature related to the arc generation mechanism, by which arcs can be distinguished. An arc with a lifetime greater than ten minutes is consistent with arc generation by Stationary Inertial Alfven Wave (StIAW) which supports a steady-state wave electric field component parallel to a background magnetic field. An StIAW is a non-fluctuating, non-travelling, spatially periodic pattern of perturbed ion density that is static in the laboratory frame. StIAWs are the predicted result of the interaction between a magnetic-field-aligned electron current and plasma convection perpendicular to a background magnetic field [1,2]. Electrostatic probes measure the fixed pattern of perturbed ion density in LAPD-U. Electron acceleration due to StIAWs is being investigated as a mechanism for the formation and support of long-lived auroral arcs. Preliminary evidence of electron acceleration from laboratory experiment is reported. [1] *J. Geophys. Res.*, 101, 10761 (1996). [2] *Nonlin. Proc. Geophys.*, 15, 957 (2008).

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