

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Auroral Arc Lifetimes and the Stationary Inertial Alfvén Wave¹

S.H. NOGAMI, M.E. KOEPKE, WVU, D.M. GILLIES, D.J. KNUDSEN, UCalgary, M. TORNUQUIST, WVU, E. DONOVAN, UCalgary — Images from the NORSTAR array of All-Sky-Imagers are used to analyze discrete auroral arcs by observing optical emission of the arcs from formation through breakup. 2-D images of the aurora, collected by All-Sky-Imagers at three sites across Canada, have been analyzed to define the lifetime of a discrete auroral arc. This poster presents a frequency distribution of auroral arc lifetimes and the statistics of other temporal quantities defined in this study (e.g., duty cycle of a given structure). The prevalence of long-lived static arcs in this study is contrasted with the lack of a complete theory to explain these statistics. We suggest that this prevalence is consistent with the laboratory-observed and predicted properties of the Stationary Inertial Alfvén Wave, a non-fluctuating, non-travelling, spatially periodic pattern in electromagnetic field and fluid quantities that arises in the simultaneous presence of a magnetic-field-aligned current channel and cross-magnetic field plasma flow [1,2].

[1] D.J. Knudsen, *J. Geophys. Res.* **101**, 10761, 1996;

[2] S.M. Finnegan, et. al., *Phys. Plasmas.* **15**, 052108, 2008.

¹This work was supported by NSF, the DOE Plasma Science Center subprogram grant DE-SC0001939, and the BaPSF at UCLA.

S.H. Nogami
WVU

Date submitted: 11 Jul 2013

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