

# Electron acceleration in the downward auroral current region

*A.P. Cran, A.N. Wright*

*Mathematical Institute, University of St. Andrews, St. Andrews,  
United Kingdom*

Global magnetospheric Alfvén waves form a current circuit that closes in the ionosphere. Part of this circuit is composed of ionospheric electrons that are accelerated to 100's of eV by a field-aligned component of the electric field. Our calculation solves for the variation of electrostatic potential along a dipolar field line, and identifies the altitude at which energisation occurs. Ohm's Law in the form of a current-voltage relation is determined from the solution of the quasi-neutral Vlasov equation.