# TWO-FLUID MODELING OF KINETIC ALFVÉN WAVES

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Kinetic Alfvén waves play a major role in the dynamics of the magnetosphere, where they transport energy and field-aligned currents from the outer magnetosphere to the auroral zone and can accelerate auroral particles. Because they travel long distances, kinetic simulations of kinetic Alfvén waves are limited in scope, and fluid models have been extensively used to describe their propagation. Recently, an improved model has been developed to include the finite frequency effect that becomes important when the wave frequency approaches the ion gyrofrequency. Higher frequency corrections can model whistler mode dynamics. In addition, fluid models generally do not include Landau damping; however, we have developed a model that approximates Landau damping by including a collision term that leads to a similar form for the damping rate as that described by the full kinetic theory. Results from this improved model applied to the auroral acceleration region will be presented.

Aurora, kinetic Alfvén waves, numerical modeling

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