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Super-Alfvénic Propagation and Damping of Reconnection Onset Signatures. PRAYASH SHARMA PYAKUREL, Univ of Delaware — The onset of magnetic reconnection in the magnetotail has far reaching consequences for the dynamics of the magnetosphere. However, our understanding of the dynamics of onset as well as when and where it occurs in the magnetosphere is incomplete. One of the fastest propagating signatures of reconnection onset is the quadrupolar Hall magnetic field that has been shown to be a Kinetic Alfvén Wave (KAW). These KAWs propagate extremely fast away from the reconnection site, carry substantial amounts of energy in the form of Poynting flux and electron flows, and may be responsible for electron acceleration and the generation of aurora. If this KAW propagation can be well understood, then this will provide valuable insight as to the relative timing of substorm onset versus reconnection onset in the magnetotail. However, to date there has not been a study of how reconnection generated KAWs will damp and disperse as they propagate. Using large scale kinetic particle-in-cell (PIC) simulations of reconnection we investigate the damping of the KAWs as they propagate away from the x-line. We show that the hall quadrupolar structure dissipates according to linear Landau damping determined from a numerical solution of the linear Vlasov equation. Extending results to magnetotail parameters, we find that only the part of the wave with k c/ω_{pi} will damp weakly enough to propagate from the mid-tail to the inner magnetosphere. In solar corona, all KAWs damp before they reach $1R_{sun}$.

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