SOLAR WIND PLASMA ENTRY INTO THE EARTH''S PLASMA SHEET FOR NORTHWARD IMF

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Processes at the magnetospheric boundaries are central to the transport of mass, energy, and momentum into magnetosphere. In the past, much attention has been given to magnetic reconnection. However, in recent years Kelvin Helmholtz (KH) modes have become an increasing focus for the interaction between the magnetosphere and the solar wind particularly for nothward IMF. Recent results indicate that three-dimensional aspects are of critical importance for this interaction. KH modes are able to trigger reconnection as a secondary process even in cases where the IMF and the magnetospheric field are largely aligned. The mode of reconnection, however, is very different in two dimensions compared to three dimensions. We will review the relevant results from these studies and present several new results for the process. Particularly, we address the questions of the quantitative of entropy and mass transport and examine how this tranport and the local changes in entropy relate to the triggered reconnection process. The presentation also address some aspects of the plasma transport further into the magnetosphere through initial results on the influence of entropy changes close to the magnetospheric boundary.

magnetospheric boundary, plasma transport, Kelvin Helmholtz modes, magnetic reconnection, entropy;

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