



Effect of the Magnetosheath Waves on the Dayside Magnetopause Reconnection

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We investigate temporal and spatial variations of dayside magnetopause reconnection during steady southward IMF. The investigation is conducted with a global hybrid-Vlasov simulation Vlasiator (<http://vlasiator.fmi.fi>) developed at the Finnish Meteorological Institute. We observe the formation of waves with characteristics of mirror modes behind the bow shock which advect towards the magnetopause. These compressional waves have anticorrelated magnetic field and density which cause large spatial and temporal variations in plasma beta at the magnetopause and thus could cause variation in the properties of reconnection. At the magnetopause we observe reconnection and formation of two-dimensional equivalents of flux transfer events (FTE). We locate magnetic X-lines and O-points to trace their movement along the dayside magnetopause yielding the position and velocity of the X-lines and FTEs over time. We observe that the main X-lines travel significant distances along the magnetopause. Finally the results are compared with theoretical predictions and THEMIS observations.