



Large scale MHD simulations of the solar wind flow past the terrestrial Magnetopause

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MHD theory indicates the occurrence of a stagnation line rather than a stagnation point in the sub-solar region of the terrestrial magnetopause. With large scale MHD simulation we investigate the structure of the magnetosheath flow close to the magnetopause. We examine the development of the plasma flow within the sub-solar area. Of special interest is the flow behaviour near the sub-solar point.

For the case of a northerly directed interplanetary magnetic field a plasma depletion layer may arise in the vicinity of the sub-solar magnetopause. Its connection to the forming of a stagnation line is of great relevance as well as a resolution of the depletion layer itself. The outer boundary flow at the flanks of the magnetopause is also of interest. Results from a theoretical analysis show that in order for magnetic reconnection to occur, the outer plasma velocity and magnetic fields have to be aligned. Through the simulation we can obtain the flow pattern and direction of the velocity and magnetic field vectors at the magnetopause flanks.