



## **The low-latitude flank magnetopause under different IMF orientations**

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The structure of the magnetopause is a subject of an intensive study for many years. At low latitudes, one can identify the low-latitude boundary layer (LLBL) on the magnetospheric side and rather often a depletion layer on the magnetosheath side of the magnetopause. A thickness of these layers varies from 0.2 to 1 Earth's radius but several examples of a very thick LLBL have been reported in flank parts of the magnetopause. Plasma parameters inside the LLBL are variable, the spacecraft usually observes a mixture of magnetosheath and plasma sheet plasmas. Several mechanisms including intermittent reconnection, impulsive penetration, and Kelvin-Helmholtz instability have been proposed to explain this phenomenon.

The magnetopause and LLBL were crossed by the Interball-1 and Magion-4 satellite pair at different local times and with differing satellite separations. The statistical approach enables us to determine typical conditions for different phenomena. On the other hand, case studies reveal a complicated structure of boundary layers: the depletion layer, outer and inner LLBL. The layers usually move in accord but, under some circumstances, only one boundary is unstable. We discuss the stability conditions for different boundaries within the magnetopause layer and analyze the role of energetic particles for these formation processes.