

## **Kelvin-Helmholtz instability development in presence of the magnetic field shear and the density profile**

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The development of the Kelvin-Helmholtz instability (KHI) on the magnetopause has been investigated in the frame of the ideal MHD taking into account the different scales of the magnetic shear (MS), the region where the magnetic field is changing, and the vortex sheet (VS), the region where the velocity is changing, with no restrictions imposed on the oscillations propagating angle. The linear analysis has shown that the disturbances tilted at small angles with respect to the magnetospheric magnetic may grow faster than the disturbances propagating exactly perpendicular to the magnetospheric magnetic field. The research also includes dependence of the unstable oscillations spectra on the density profile. The results obtained suggest for the density profile to play a crucial part in the instability development. The first results of the numerical simulation of the KHI development with different MS and VS scales are presented. The vortex structures for the different ratio of the MS width to the VS thickness are compared.