

**THE MACH CONE IN INHOMOGENEOUS MAGNETOSPHERE:  
FAST MAGNETOACOUSTIC MODE GENERATION BY THE SOLAR WIND  
OBLIQUE IMPULSE ON THE MAGNETOPAUSE**

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An important mechanism of the ULF wave generation in the magnetosphere is the impulse of the solar wind dynamic pressure hitting the magnetopause. To date, the case of normal propagation of the impulse toward the magnetopause was studied. In this report, we consider a more common case when the impulse drops onto the magnetopause at some finite angle. In this case, a super-Alfvénic source moving on the magnetopause appears. In the homogeneous medium, it would generate fast mode propagating as the Mach cone (the Cherenkov emission). However, the magnetospheric plasma is inhomogeneous with the Alfvén speed changing across the magnetic shells. To take into account this effect, we consider the case of the one-dimensionally inhomogeneous model of the magnetosphere (box model). It is shown that the inhomogeneity leads to the bending of the Mach cone and its subsequent reflection from the surface inside the magnetosphere where the local Mach number equals one. Then, the Mach cone expands toward the magnetopause, and then reflects from it. Multiple reflections lead to turning the Mach cone into a curved polyline. Observational consequences of this picture are discussed.