



Diffusion of the interplanetary magnetic field into the planetosphere of Venus

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A new model approach is proposed for explaining the penetration of the interplanetary magnetic field inside the Venusian planetosphere. A new type of magnetic field Diffusion is introduced in a single- fluid mass-loaded gasdynamic model describing the planetosphere of the nonmagnetic planet. The photoionization in the oxygen corona is supposed to be responsible for the creation of the ionized substance in the planetosphere. This process is taken into account in the model via the source terms in the gasdynamic equations. The finite time duration of the new ions assimilation is taken into account by introduction of additional currents and charges. They are caused by non - picked up new ions in the frame of time and length scales, smaller than the infinitesimal scales of the considered continuum. The analysis of the magnetic field lines kinematics reveals that the magnetic field is not frozen in. There is a component of the magnetic field diffusion against the flow of the background neutral particles. This phenomenon can explain the penetration of the IMF through the

planetopause under appropriate conditions.