



On the numerical modeling of the Venus planetosphere/mantle

M. Kartalev (1), V. Keremidarska (1)

Institute of Mechanics, Bulgarian Academy of Sciences, Sofia

A scheme for modeling the interaction of the solar-wind with nonmagnetic planet is proposed. The obstacle, deflecting the solar wind flow around the planet is the planetopause - the boundary of the planet planetosphere. The creation of the ionized gas, forming the planetosphere is supposed to be only due to the ionization processes in an existing neutral exosphere of the planet. A self-consistent consideration of the planetosheath (solar wind region between the planetopause and the bow shock) and the planetosphere is performed in gasdynamic approach, supposing decoupling of the MHD system of equations. Mass-loading process in both region is taken into account. The pressure balance is establishing the shape and position of the planetopause, determined in the process of the solution. A grid characteristic numerical scheme is applied. The result are demonstrating quite satisfactory coincidence with some Pioneer Venus Orbiter measurements around Venus.