

3D Model of the System Magnetosheath-Magnetosphere

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We report some implementations of a new numerical three dimensional model of the system magnetosphere – magnetosheath, lately developed in the Institute of Mechanics, Bulgarian Academy of Sciences, Sofia. This is a self-consistent solution of the magnetosheath problem (here in gasdynamic approach) and a hybrid numerical/data based magnetosphere model. The geometries and the positions of the shock wave and the magnetopause are obtained as a part of the solution. The model provides in particular a 3D distribution of plasma parameters in the magnetosheath under certain parameters of the solar wind flow. One of the advantages is the capability of the model to simulate the influence of the specific 3D geometry of the magnetopause on the magnetosheath flow. The model has been tested on real data – Interball-1 magnetosheath plasma measurements.