



New model of the heliospheric interface: a multi-component description of the heliospheric plasma

Y.G. Malama (1,2), R. Kallenbach (3), S.V. Chalov (1), V.V. Izmodenov (4,2), I. Kolesnikov (4,2)

(1) Institute for Problems in Mechanics Russian Academy of Sciences, Moscow, Russia, (2) Space Research Institute (IKI) Russian Academy of Sciences, Moscow, Russia, (3) International Space Science Institute, Bern, Switzerland, (4) Lomonosov Moscow State University, Faculty of Mechanics and Mathematics, Russia

This paper presents first results of our new four component model of the solar wind interaction with the local interstellar medium. In the frame of this model the solar wind protons, electrons and pickup ions are considered as separate components. The solar wind protons and electrons are treated as co-moving fluids, while the pickup proton component is described by a Fokker-Planck equation for the isotropic velocity distribution function. Both solar wind protons and pickup protons interact with the interstellar H atoms by charge exchange. In the model we solve kinetic equation for the interstellar H atom component by Monte Carlo method self-consistently with the set of kinetic and hydrodynamic equations for the plasma components. Detailed mathematical formulation and assumptions of the model and its first results are presented.