

POSSIBLE NEW SOURCE OF THE HELIOSPHERIC ENAs: INTERSTELLAR PICKUP PROTONS

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We present results of our recent developments of multi-component model of the solar wind interaction with the partially ionized local interstellar medium developed by Malama et al (2006). This model includes a multi-component treatment of charged particles in the heliosphere. All charged particles are divided into several co-moving types. The coldest type, with parameters typical of original solar wind protons, is considered in the framework of fluid approximation. The hot pickup proton components created from interstellar H atoms and heliospheric ENAs by charge exchange, electron impact ionization and photoionization are treated kinetically. In addition to the heliospheric pickup protons, the model includes now kinetic description for interstellar pickup protons which are created outside the heliopause. The pickup proton population is a result of charge exchange of interstellar hydrogen atoms and heliospheric ENAs that enter the region outside the heliopause from the inner heliosheath between the termination shock and the heliopause. It will be shown that the ENAs created outside of the heliopause from the interstellar pickup protons provide essential contribution into the spectra of heliospheric ENAs at 1 AU and, therefore, these ENAs are important for analyses of IBEX observations.

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