**THE EFFECTS OF THE HELIOSPHERIC INTERFACE ON THE DISTRIBUTION**

**OF INTERSTELLAR DUST PARTICLES NEAR THE SUN**

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Interstellar dust (ISD) particles penetrate the heliosphere because of the relative motion of the

local interstellar cloud and the Sun. The penetrated particles pass through the heliospheric interface

region - the region of solar wind and interstellar plasma interaction [1]. The electromagnetic

force, which is dominant in the heliospheric interface, affects the motion of positively charged

ISD particles, and therefore, the ISD flow modifies after the passage through this region [2].

In this study, we show how the heliospheric interface influences the distribution of ISD particles in the inner heliosphere. For this purpose, we develop the first model of ISD distribution in the heliosphere, which takes account of both the effects of the heliospheric interface and the rotating

heliospheric current sheet. We consider the effects concerning the number density distribution

and the theoretical counts on the Ulysses dust sensor. Using the model, we demonstrate that the

heliospheric interface strongly influences the distribution of small ISD particles (radius a = 250

nm and smaller, for astronomical silicates) near the Sun. For the smallest considered particles

(a = 150 nm), there are qualitative differences between the results obtained by the models with

and without the effects of the heliospheric interface, respectively. The results of computations

show that the heliospheric interface facilitates the penetration of a = 150 nm dust particles

in the inner heliosphere. It contradicts the intuitive concepts that the heliospheric boundaries

filter out small ISD particles. We also find out that the main effect of the heliospheric interface

is the deflection of ISD particles in the outer heliosheath. We show that this deflection explicitly

depends on the parameters of the interstellar magnetic field. The computations with different

heliospheric models show that the ISD theoretical distribution near the Sun is sensitive to the

heliospheric model used and particularly the plasma parameters in the pristine LISM. Thus, the analysis of ISD data provides a new approach for distant diagnostics of interstellar plasma parameters.

[1] Baranov V.B., Malama Y.G., 1993, JGR, V. **98**, 15157.

[2] Slavin J.D., Frisch P.C., Muller H.-R. et al., 2015, ApJ, **760**, id 46.