EROSION OF MARTIAN ATMOSPHERE ACCORDING TO PLASMA EXPERIMENTS DATA; A.V. Zakharov, Space Research Institute, Moscow, 117810, Russia

The report presents results on the ionospheric ions outflow measured by the plasma experiments on the PHOBOS-2 mission. The experiments show a large escape rates of \( O^+ \) ions (\( \sim 2 \times 10^{25} \text{ ions s}^{-1} \)) from the Martian ionosphere. The loss of this ions results from both ion pick-up due to mass-loading of the solar wind in the Martian boundary layer and an acceleration of the ionospheric ions up to several keV, quite similar to that observed above the Earth’s auroral oval.

In the case if Mars lacked a significant magnetic field in the past, the measured escape rate implies that planet has been exposed to a continuous atmospheric erosion what can be an important cause of the loss of the Martian atmosphere over geologic time. However, the erosion of the Martian atmosphere due to dissociative recombination of \( O_2^+ \) ions, apparently is higher than one from the solar wind interaction.