influence of neutral gas on potential of plasma in expander of open trap [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2021.48.1.066

Skovorodin D.I.

Budker Institute of Nuclear Physics, Novosibirsk, Russia, [d.i.skovorodin@inp.nsk.su](mailto:d.i.skovorodin@inp.nsk.su)

Open magnetic traps with axial symmetry are one of the candidates for creating a fusion system [1]. The confinement of plasma in open traps is determined by the longitudinal losses of heat and particles. Plasma in an open trap is usually positively charged to maintain the ambipolarity of longitudinal losses. The potential barrier that retains hot electrons is distributed from the central region of the trap to the end plate. The plasma flow regime in the expander affects the confinement of energy in the trap. In this paper, the influence of the following effects is considered: acceleration of the ion flow by an electric field and its deceleration due to charge exchange on the residual gas. The results of numerical simulation are presented. It is shown that the values ​​of the plasma potential in the expander and the Debye drop on the surface of the end plate are very sensitive to variations in the ion flow velocity.

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVIII/Mu/ru/BZ-Skovorodin.docx) [↑](#footnote-ref-1)