FIRST RESULTS OF THE HEAT AND PARTICLE TRANSport study IN THE GLOBUS-M2 SPHERICAL TOKAMAK [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2020.47.1.037

A.Yu. Telnova, N.N. Bakharev, V.K. Gusev, S.N. Zhiltsov, G.S. Kurskiev, E.O. Kiselev, V.B. Minaev, I.V. Miroshnikov, M.I. Patrov, Yu.V. Petrov, N.V. Sakharov, V.A. Tokarev, S.Yu. Tolstyakov, E.A. Tukhmeneva, P.B. Shchegolev, N.A. Khromov

Ioffe Institute, St. Petersburg, Russia, anna.telnova@mail.ioffe.ru

The report is devoted to the heat and particle transport study in the Globus-M2 spherical tokamak [1]. Globus-M2 is a spherical tokamak with major radius R = 0.36 m and minor radius a = 0.24 m (aspect ratio A = 1.5) and is a modernized version of the Globus-M spherical tokamak [2]. The upgrade made it possible to increase the plasma current IP up to 500 kA and the toroidal magnetic field BT up to 1 T.

The aim of the study was to determine the effectiveness of thermal insulation in a compact spherical facility with additional plasma heating using neutral injection. In the calculations, the first experimental results of measuring the temperature and density of electrons, the temperature of ions, and the total stored plasma energy was used.

The calculations were performed using the ASTRA code [3]. The main attention in the calculations was given to the influence of the safety factor and the limit value of the normalized beta on the confinement of particles and energy in discharges with early neutral beam injection at the current ramp up phase.

This work was supported by the Russian Science Foundation, project No. 17-72-20076. The experimental work was performed on the Unique Scientific Facility "Spherical tokamak Globus-M", which is incorporated in the Federal Joint Research Center "Material science and characterization in advanced technology" (unique project identifier RFMEFI62119X0021).

References

1. Minaev V.B. et al, 2017, Nucl. Fusion, 57 066047;
2. Gusev V.K. et al, 1999, Tech. Phys. 44 1054;
3. Pereverzev G. and Yushmanov P. N., 2002, Max-Plank IPP Report, 5/98.
1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/Mu/ru/AT-Telnova.docx) [↑](#footnote-ref-1)