Contribution ID: **3402** Type: **not specified**

P4.1025 First results of the Globus-M2 fast ion studies

Thursday, 11 July 2019 14:00 (2 hours)

See full abstract here
http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1025.pdf

Globus-M2 [1] is a new generation one-Tesla compact spherical tokamak with two 1 MW neutral beam injectors and 0.5 MW ion cyclotron resonance heating system. Additionally Globus-M2 is equipped with a set of new diagnostics, suitable for fast ion studies, including scanning two-neutral particle analyzer system, neutron detectors and spectrometer.
Fast ion study was one of the main research topics on the previous Globus-M tokamak [2]. Former experiments with plasma current Ip = 200 kA and toroidal magnetic field BT = 0.4 T demonstrated high level of energetic particle losses. Increase of Ip and BT up to 250 kA and 0.5 T respectively led to fast ion confinement improvement [3]. In this presentation the impact of the further Ip and BT rise is discussed. Besides the new diagnostics, mentioned above, a set of new modeling techniques, based on different approaches, is used. Benchmark of these techniques and comparison of their results with the experimental data is described. Neoclassical and MHD-induced losses, neutron generation and fast ion distribution in the Globus-M2 discharges are investigated. Predictions for the full-scale Globus-M2 experiments with the BT = 1 T, Ip = 500 kA and 5 MW/m3 heating power density are presented. References
[1] Gusev V.K. et al. 2013 Nucl. Fusion 53 093013. [2] Bakharev N.N. et al. 2015 Nucl. Fusion 55 043023. [3] Bakharev N.N. et al. 2018 Nucl. Fusion 58 126029.

Presenter: BAKHAREV, N. (EPS 2019)

Session Classification: Poster P4

Track Classification: MCF