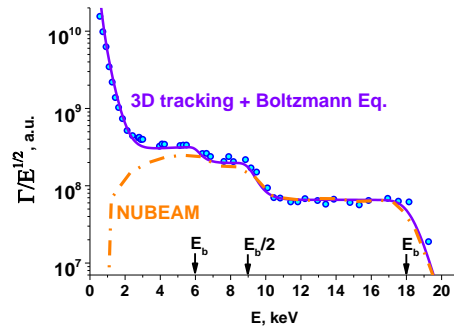


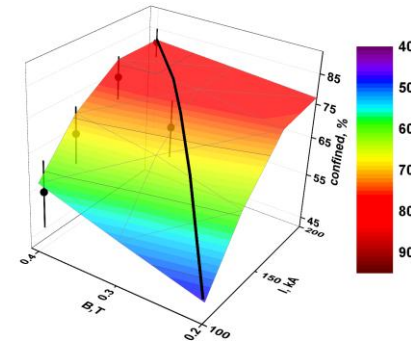
Fast Particle Behavior in Globus-M (spherical tokamak)

Experiments and modeling by the two different codes (NUBEAM and 3d tracking algorithm with the solution of the Boltzmann kinetic Eq.) revealed high fast ion losses (40-90%) during 18-26 keV NBI in D plasma. This fact gives us an opportunity to accurately verify modeling results and to study dependences of the fast ion losses on the different plasma parameters.

Different type of modeling are in a good agreement with each other and with the experiment – see comparison of the experimental NPA spectra and calculated using fast ion distributions from two codes:



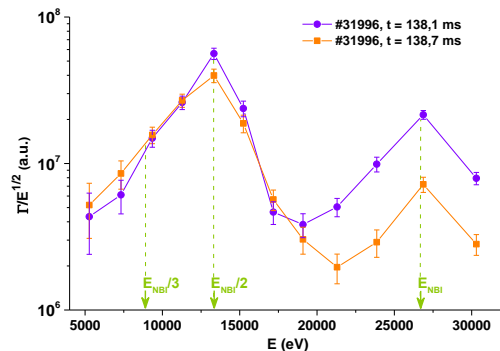
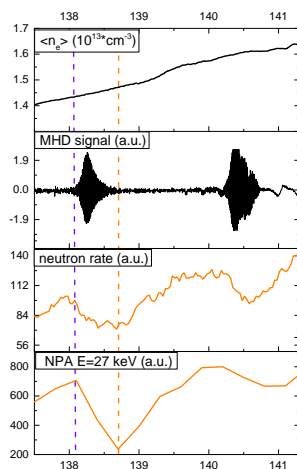
Strong dependence of fast ion losses on plasma current were observed (like in other STs):



Surface – modeling, dots – experiment.

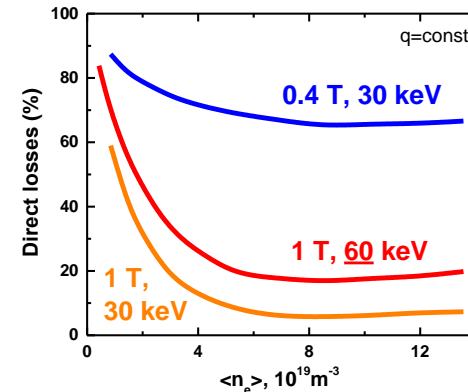
TAEs lead to additional losses

TAE bursts (Mirnov signal) coincide in time with drops of neutron rate and NPA fluxes with energy close to the NBI energy. NPA spectra before the TAE and after it is on the right.



In Globus-M2 fast ion confinement will be significantly improved. New 60 keV NBI is proposed.

Dependences of the direct losses (which prevail in Globus-M 30 keV D experiments) on the average electron density in Globus-M (0.4T) and Globus-M2 (1 T).



If you have any questions, please contact bakharev@mail.ioffe.ru