

T-15MD TOKAMAK: MISSION AND NEW EXPERIMENTAL RESULTS ^{*)}

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The main objectives of scientific research on the T-15MD tokamak ($R = 1.5$ m, $a = 0.67$ m) are to prepare the physical, technical and technological base for the development of steady-state thermonuclear neutron sources for hybrid reactor and work in support of Russia's participation in the ITER project. The scientific program of T-15MD is aimed at solving topical issues of tokamak plasma physics (development of a long-pulse stable discharges with non-inductive current drive and improved plasma confinement, physics of turbulence and transport, plasma wall-interaction, divertor physics), engineering problems (first wall technology, safety assurance), development of additional plasma heating and fueling systems, development of diagnostic methods.

In the 2024 experiments, a plasma current of 520 kA was achieved in the T-15MD (Fig. 1). Discharges with elongation $k \geq 1.5$ (Fig. 2) were obtained, which significantly exceeds the natural elongation. Experiments were carried out at $B_T = 1.5$ T. A 1 MW gyrotron was used for microwave breakdown and plasma heating. Electron plasma temperature values $T_e(0) \geq 2$ keV were achieved at

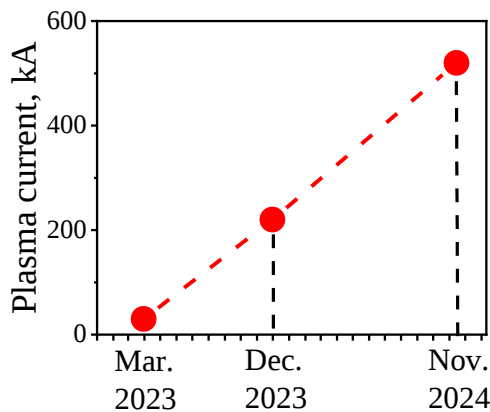


Fig.1 Increase of plasma current values achieved in T-15MD experimental campaigns core plasma density $n_e(0) \geq 1.5 \times 10^{19} \text{ m}^{-3}$.

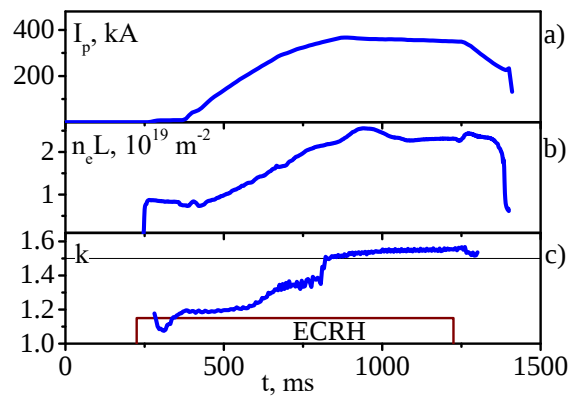


Fig. 2 Shot 3166. Traces of plasma current (a), line averaged density (b) and elongation (c).

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^{*)} [abstracts of this report in Russian](#)