ANALYSIS OF DISCHARGE SCENARIOS on T-15 tokamak

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The ongoing construction of the T-15 tokamak makes the task of analyzing the basic discharge scenarios, which are planned in experiments on this device, really urgent. The analysis of discharges on the T-15 was held on the stationary phase during studies [1, 2]. It was shown that such configurations can be maintained by feedbacks. It was also shown that the system of magnetic diagnostics can recover boundary of the plasma column with a specified accuracy if the sensor measurement error does not exceed 1-3 per cent.

Meanwhile, the analysis of the stationary states only is insufficient. Study [3] is an example of a "failure" (unrealizable) scenario, in which due to an early vertical stretch of the plasma column occurred a configuration, which vertical instability could not be suppressed by the feedback system.

Nowadays all of the major structural elements of the T-15 gained their specifics [4], and therefore, there is a possibility of quite a realistic analysis of the current recovery stage and its entering the stationary in discharge on the T-15. The purpose of this work was to conduct such an analysis. The nfusion.cs.msu.ru resource was used during the calculations, which integrated the TOKSCEN modules (equilibrium, vertical stability and plasma evolution) [5] and the RPB (restoration of the plasma boundary) [6]. The ability to suppress the vertical plasma instability and the accuracy of its borders were determined at each time point. The calculations could find realizable discharge scenarios, from the point of view of the authors of the report.

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