INVESTIGATION OF THE DETAILS OF THE ELECTRON TEMPERATURE PROFILE DURING THE SHIFT OF THE PLASMA column AND THE ec-POWER UP TO 1.5 MW IN THE TOKAMAK T-10 [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2023.50.2023.1.1.061

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Experiments with a preprogrammed linear in time shift (up to 20% of the small radius of plasma a) performed in plasma with a reverse beam of the tokamak JT-60U revealed fine details of the Te,i profiles. In particular, the transition from a flat Te profile in the central part of the cord to a very steep one inside the VTB (up to gradTe = 1 keV/cm) occurs within 3% of a [1]. This fact made it possible to estimate from above the spatial width of the receivers of the 2nd harmonic of EC radiation. Later it became clear that this is a mode without current in the central part of plasma ("current hole") and with special equilibrium [2] in the center.

The report supplemented the results of T-10 with both fast [3] (up to 6 cm in 60 ms at a=30 cm) and slow shift [4-5]. With an ECRH with a power of 0.4 and 0.8 MW and an almost transverse input of EC waves, the total spatial width of the reception of EC radiation detectors is about 1 cm. The flat profile Te in the center indicates a complete re-closure of the magnetic surfaces during internal crashes in accordance to "Kadomtsev model". No noticeable ITBs were detected near the surface q=1. In one case, the experiments can be interpreted as the existence of a very narrow VTB with a width of about 0.5 cm and a double Te gradient that disappears with increasing power. In a T-10 plasma with a tungsten limiter, lithium coating and Rec = 1.5 MW with simultaneous co- and counter-injection of EC current by two gyrotrons, a new type of L-H transitions has been discovered [6-7]. The results of a rapid shift of 3 cm (10% of the small radius) are not obvious in this case. The spatial width of the reception of EC radiation detectors has increased, and signs of transport reduction during the shift are also visible, visible ITBs are absent.

With a slow shift, we have shown (see Fig. 30 in [5]) that the generation of a small EC current only in a zone with 1 cm wide leads to the appearance of ITB after sawtooth oscillations. With a decrease in the EC current compared to [5], the width of the zone narrows to 6 mm, which only strengthens our speculation [5] about the importance of generation in the outer zone of the magnetic island q=1, where the theorists [8] predicted the features of the radial electric field. ITB is absent when generating EC current outside of this narrow zone.

The work was carried out with the support of the NRC "Kurchatov Institute".

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