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PLASMA DENSITY FLUCTUATIONS IN THE T-15MD TOKAMAK MICROWAVE INTERFEROMETER SIGNALS CAUSED BY MHD DISTURBANCES AND SAWTOOTH OSCILLATIONS^{*)}

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A microwave interferometer with a probe wavelength of 0.935 mm is used to measure the average plasma density of the T-15MD tokamak [1, 2]. Probing is performed through the center of the vacuum chamber along the vertical chord. The intermediate frequency of the microwave interferometer is 5 MHz, and a phasemeter based on AD8302 phase detectors and an STM32 controller is used to obtain data in real time [3]. The accuracy of measuring the linear plasma density nl is 2×10^{16} m⁻² [4].

The data on the chord plasma density in the discharges of the T-15MD tokamak, obtained using a microwave interferometer, are presented. Due to the high performance of the phasemeter and the high accuracy of the measurements, the influence of MHD activity (Fig. 1) and sawtooth oscillations (Fig. 2) on the time evolution of nl were detected. Sawtooth oscillations were previously analyzed using a microwave interferometer on the T-10 tokamak [5].



The microwave interferometer data correlate with signals from the radiation loss diagnostics (AXUV) [6] and the soft X-ray measurement system (SXR) [7].

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