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Power modulation experiments using fundamental electron cyclotron heating is performed to study the transport process in JIPPT-IIU tokamak. The microwave power from 200 kW gyrotron installed in CHS experimental hall is transmitted via 62 meter long corrugated waveguide system including 11 miter bends. The coupled power to the transmission system was about 120 kW and that to the antenna system was 60 to 70 kW. The injection antenna focus the beam with the waist size of 20 mm at the plasma center. The polarization is controlled by the polarizer plate placed in between the quasi optical transmission system in the CHS hall side.

Typical time evolution of the discharge during the power modulation experiment with ECH is shown in Fig. 1. Here, ECH is applied from  $t=172$  to 252 ms. Power is modulated at 250 Hz square wave during the last 50 ms of the ECH pulse. The electron temperature observed by 8-channel heterodyne electron cyclotron emission (ECE) show the increase of the electron temperature and fast response to the modulation. The electron temperature measured by YAG-Thomson scattering show that the central electron temperature rises from about 1 keV to 1.2 keV due to the ECH. Accordingly, the small decrease of the ohmic input is observed.

The ECE intensity calibrated by the electron temperature from YAG-Thomson scattering is used to analyze the heat wave propagation. Figure 2 shows the Fourier transformed temperature modulation amplitude and phase delay at 250 Hz as a function of radius. The amplitude decreases as radius because the heating beam is focused at the center in this case. This tendency is kept when the input polarization is varied but the phase delay changes as the polarization. This indicates that the power deposition profile is affected by the input polarization. Similar sets of data are taken for

various input polarization and on or off-axis heating. Detailed analysis is underway.

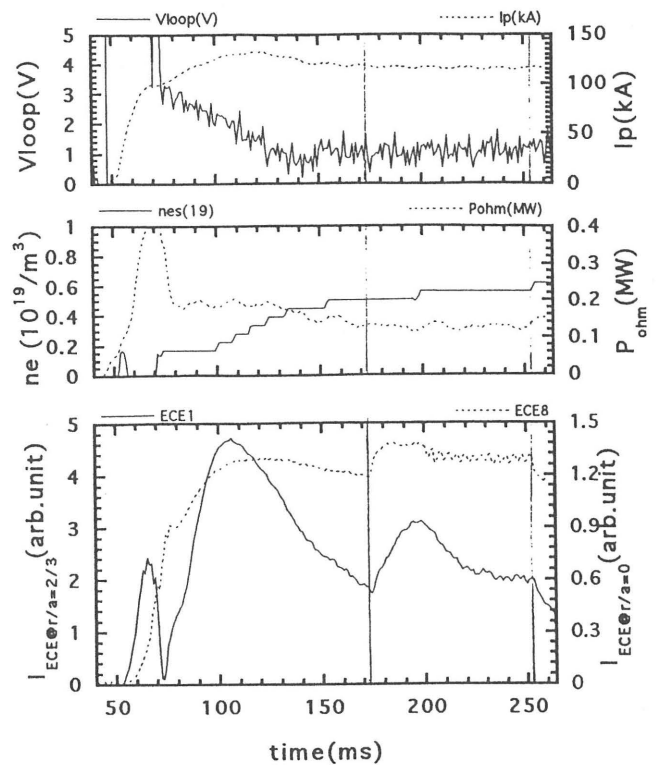


Fig. 1 Typical time evolution of the discharge during the power modulated ECH experiment. ECH is applied from 172 to 252 ms. ECH power is modulated at 250 Hz with square wave at last 50 ms of the pulse.

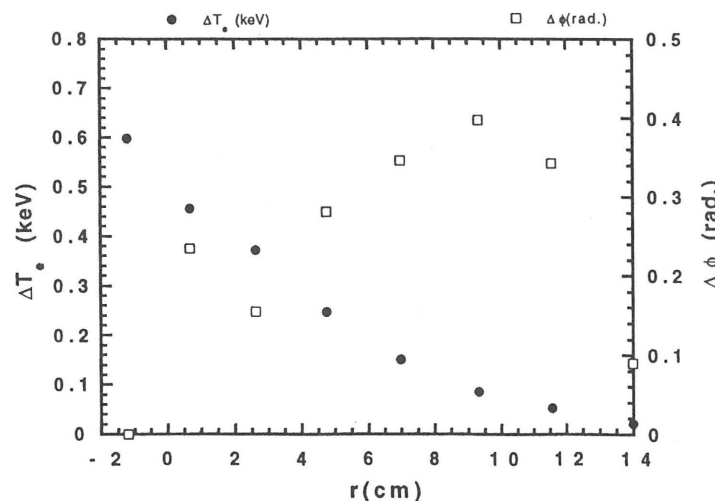


Fig. 2 Fourier transformed electron temperature response to the modulation as a function of radius. Closed circles indicate electron temperature amplitude and open squares indicate phase delay.