(TC) Report



May 10, 2024 (T. Tokuzawa)

Date: May 9, 2024 Time: 10:30 - 16:45 Shot#: 190798 - 190924 (127 shots)

Prior wall conditioning: He Divertor pump: ON Gas puff: H2, Pellet: NO, IPD: NO

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NBI#(1, 2, 3, 4, 5)=gas(H, H, H, H, H)=P( -, 2.0, 2.2, 3.1, 2.4)MW
ECH(77GHz)=ant(5.5-Uout (or 1.5U), 2-OUR)=P(698, 380)kW
ECH(154GHz)=ant(2-OLL, 2-OUL, 2-OLR)=P(705, 889, 982)kW
ECH(56GHz)=ant(1.5U)=P( - )kW
ICH(3.5U, 3.5L, 4.5U, 4.5L)=P( -, -, -, - )MW
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Remarks: no

Topics

- 1. Investigation of turbulence and heat propagation characteristics in modulated ECH experiments (N.Kenmochi) [#190797 #190902]
- Experimental study of the electron temperature anisotropy by using the LHD Thomson scattering system (I. Yamada) [#190903 #190924]

Investigation of turbulence and heat propagation characteristics in modulated ECH experiments

Experimental conditions: (R_{ax} , Polarity, B_{t} , γ , B_{q}) = (3.6 m, CW, 2.75 T, 1.2538, 100.0%)(# 190798 - #190902)

Objective: To investigate in detail the relationship between the time scale of the phenomenon and the propagation velocity of heat and turbulence.

Results:

- Heat and turbulence propagation was observed at various heating powers and heating time widths.
- ✓ Up to about 4-80 ms, the propagation velocity of the thermal pulse has a power-law relationship, with the shorter the pulse width, the faster the propagation velocity.
- \checkmark When the pulse width increases beyond 160 ms, the power law is violated.
- ✓ Positional scan data of both BS and HIBP measurements have also been successfully taken.
- ✓ Fast Thomson scattering data have also obtained at 20 kHz sampling.
- Based on the results of turbulence measurements, etc., the reasons for the change in the above relationship between
 propagation speed and pulse width will be clarified.



Experimental study of the non-Maxwellian distribution of electrons and electron temperature anisotropy by using the LHD Thomson scattering system



No clear evidence for non-Maxwellian distribution was observed in the results by the 9-CH polychromator. Yesterday, we verified that the new 12-CH polychromator seems to work well. Some interesting phenomena were seen in the results by the 12-CH polychromator. We will perform more careful and reliable calibration of it ASAP, and continue with more detailed analysis.