

(IA) Session Report

May 31, 2024 (H. Funaba)

Date: May 30, 2024

Time: 10:25 – 16:45

Shot#: 192243– 192365 (123 shots)

Prior wall conditioning: No

Divertor pump: On

Gas puff: H₂, Ar, CH₄

Pellet: C-Pellet

(R_{ax}, Polarity, B_t, γ, B_q) = (3.53 m, CCW, 2.7T, 1.2538, 100 %), (3.6 m, CCW, 2.7T, 1.2538, 100 %)

NBI#(1, 2, 3, 4, 5) = gas(H, H, H, H, H)=P(4.5, 4.0, 4.1, 3.7, 3.9) MW

ECH(77GHz) = ant(1.5-Uo, 5.5-U, 2-OUR)=P(-, 0.337, 0.232) MW

ECH(154GHz) = ant(2-OLL, 2-OUL, 2-OLR)=P(0.389, 0.337, 0.355) MW

ICH(3.5U, 3.5L, 4.5U, 4.5L) = P(-, -, -, -) MW

Topics

1. Wave-particle interaction at low frequency mode (K. Ida)
2. Phase space dynamics triggered by MHD burst through Landau and transit-time damping (K. Ida)
3. Investigation of interaction between broadband phase space dynamics and wide frequency range of fluctuations during the energetic particle induced MHD burst event (Y. Kawachi (Nagoya U.), T. Kobayashi)

Topics 1 Wave-particle interaction at low frequency mode

Topics 2 Phase space dynamics triggered by MHD burst through Landau and transit-time damping

K.Ida, M.Yoshinuma, T.Kobayashi, Y.Kawachi

Background and motivation:

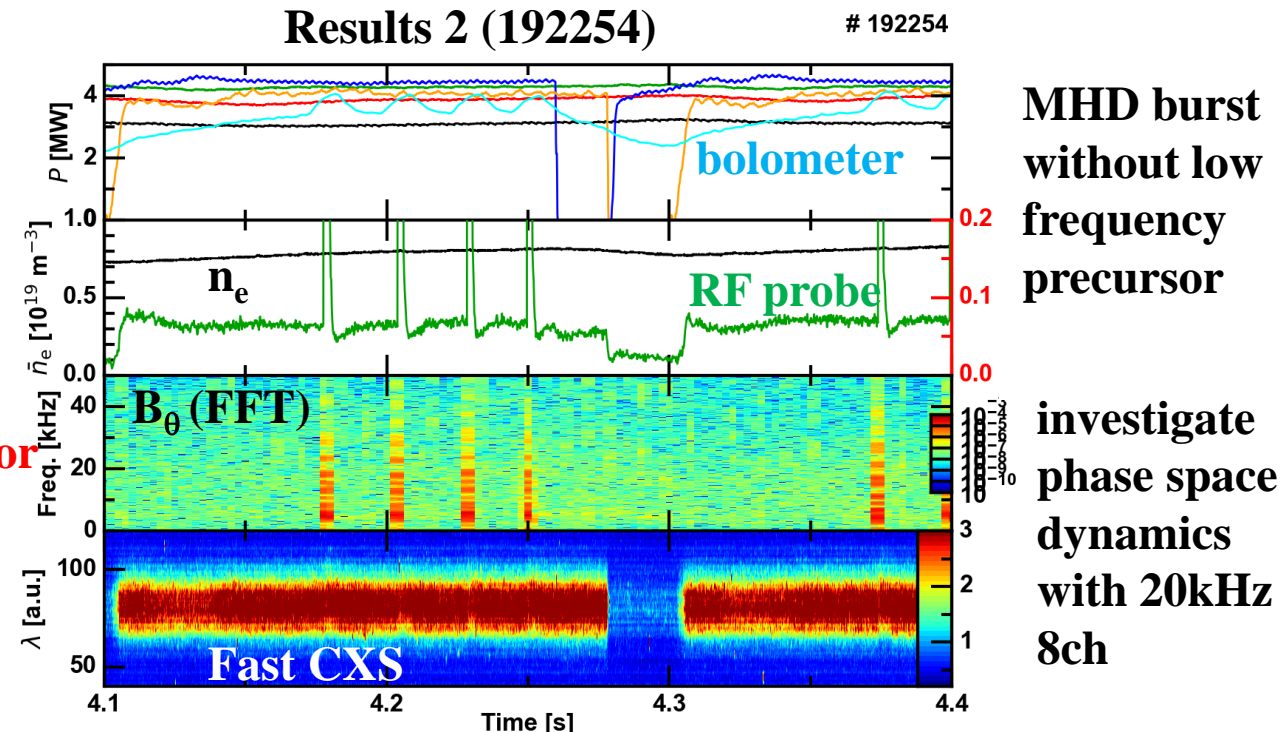
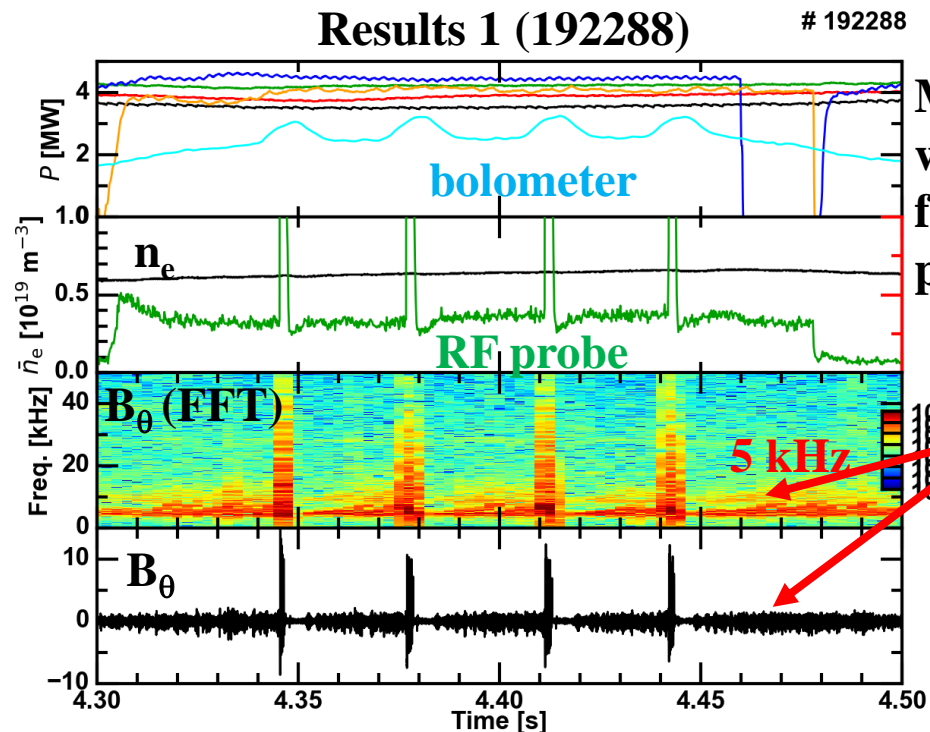
Time resolution of fast charge exchange spectroscopy has been improved to **20 kHz** in this experimental campaign to detect phase space fluctuation driven by low frequency (**5kHz**) EP driven instability.

Results0 : 8 ch 20 kHz fast CXS data was obtained with reasonable noise level using 4 spectrometer.

Results1 : low frequency mode (~ 5 kHz) was observed in between the MHD burst.

\rightarrow we will try to detect phase space fluctuation at 5 kHz using conditional averaging

Results2 : The phase space dynamics was observed for the no precursor MHD burst with 6ch 20 kHz system



Investigation of interaction between broadband phase space dynamics and wide frequency range of fluctuations during the energetic particle induced MHD burst event

Y. Kawachi et al

Experimental conditions: (R_{ax} , Polarity, B_t , γ , B_q) = (3.6 m, CCW, 2.7T, 1.2538, 100 %)

Objective: Identification of electron heating by EP induced MHD burst

What we did:

- We have developed event trigger system for fast Thomson scattering and fast ECE signal, to identify if the electron temperature really increase or not.

Results:

- We successfully obtained Fast Thomson scattering diagnostics with event trigger system
- We had some trouble for the event trigger system for fast ECE signal, but finally we fixed the problems. It should work for the today's morning experiment and will be performed.

