(TG4) Plasma instability group report

Nov. 24, 2021 (N. Kenmochi)

Date: Nov. 24, 2021
Time: 12:50 - 18:45
Shot#: 173290 – 173393 (104 shots)

Prior wall conditioning: Yes (D2)
Divertor pump: On except for 2-I
Gas puff: D2, Pellet: No
NBI#(1, 2, 3, 4, 5)=gas(D, D, D, D, D)=P(1.0, 2.0, 1.0, 6.2, 2.6)MW
ECH(77GHz)=ant(5.5-Uout (or 1.5U), 2-OUR)=P(700, 790)kW
ECH(154GHz)=ant(2-OLL, 2-OUL , 2-OLR)=P(980, 930, 990)kW
ECH(56GHz)=ant(1.5U)=P(0)kW
ICH(3.5U, 3.5L, 4.5U, 4.5L)=P(0, 0, 0, 0)MW
Neutron yield integrated over experiment = 1.1×10^{17}

Topics

Investigation of the effect of anisotropic plasma pressure on MHD equilibrium in the three-dimensional magnetic configuration (H. Nuga)

Investigation of the effect of anisotropic plasma pressure on MHD equilibrium

Shot #: 173290-173393 (104 discharges) H. Nuga

Experimental conditions:

(R_{ax}, Polarity, B_t, γ, B_q) = (3.6 m, CW, 2.75 T, 1.254, 100 %)

(R_{ax}, Polarity, B_t, γ, B_q) = (3.6 m, CW, 1.375 T, 1.254, 100 %)

Background and motivation:

- Ordinary MHD equilibrium assumes isotropic plasma pressure.
- NBI heating and current drive deform the plasma velocity distribution function into non-isotropic one.
- In low density high beta plasmas, anisotropic plasma pressure can not be ignored as compared to the thermal pressure.
- Aim of this exp. is taking reference data with EP measurement.

Summary:

- Systematic dataset for analyses were taken with EP measurement.
- Due to machine the trouble, HIBP was not available.
- Density scan was performed in 5*2 beam patterns * 2 magnetic configuration.
- Density range in high B field is 0.5e19< ne< 3e19
- Density range in half B field is 0.5e19< ne< 1.5e19