(TG3) Spectroscopy group report

Nov. 11, 2021 (M. Goto)

Date: Nov. 10, 2021
Time: 15:15 – 16:30
Shot#: 172257 – 172275 (19 shots)
Prior wall conditioning: No
Divertor pump: ON
Gas puff: D_2
Pellet: W (Impurity pellet)

NBI#(1, 2, 3, 4, 5)=gas(H, D, D, D, D)=P(4.3, 2.5, 2.1, 5.5, 4.8)MW
ECH(77GHz)=ant(5.5-U, 2-OUR)=P(0.703, 0.792)MW
ECH(154GHz)=ant(2-OLL, 2-OUL, 2-OLR)=P(0.979, 0.930, 0.986)MW
ICH(3.5U, 3.5L, 4.5U, 4.5L)=P(0, 0, 0, 0)MW
Neutron yield integrated over the experiment = 1.2×10^{16}

Topics
1. Study of thermal transport for the plasma with a temperature hole (M. Goto)

Study of thermal transport for the plasma with a temperature hole (Goto, Oishi, Murakami)

Experimental conditions:

(R_{ax}, Polarity, B_t, γ, B_q) = (3.6 m, CW, 2.75 T, 1.2538, 100%),
(3.75 m, CW, 2.64 T, 1.2538, 100%)

Objective and method:

- Thermal transport for plasmas with a temperature hole produced by tungsten pellet is investigated.
- Formation of temperature hole plasma is first attempted for R_{ax}=3.75 m configuration.
- The n_e region is sought for where impurity accumulation and T_i measurement by CXS are compatible.

Results:

- Temperature hole was found to be formed with a base n_e~1e19 m^{-3} so that T_i profiles could be obtained by CXS (Fig. 1).
- It is confirmed that n_e hole is also formed, and T_i hole structure is gentler than T_e hole (Fig. 2).
- Plasma sustainment was difficult with R_{ax}=3.75 m and shallow holes are only observed (Fig. 3).

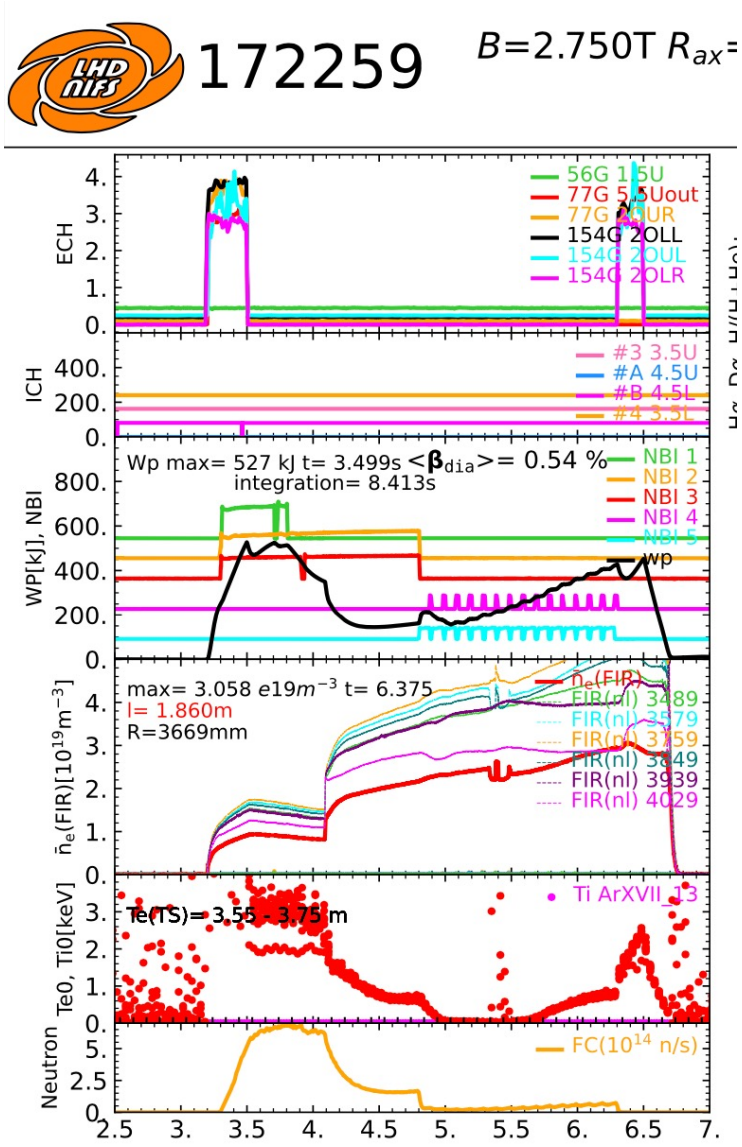

Fig. 1

#172260 (3.6 m)

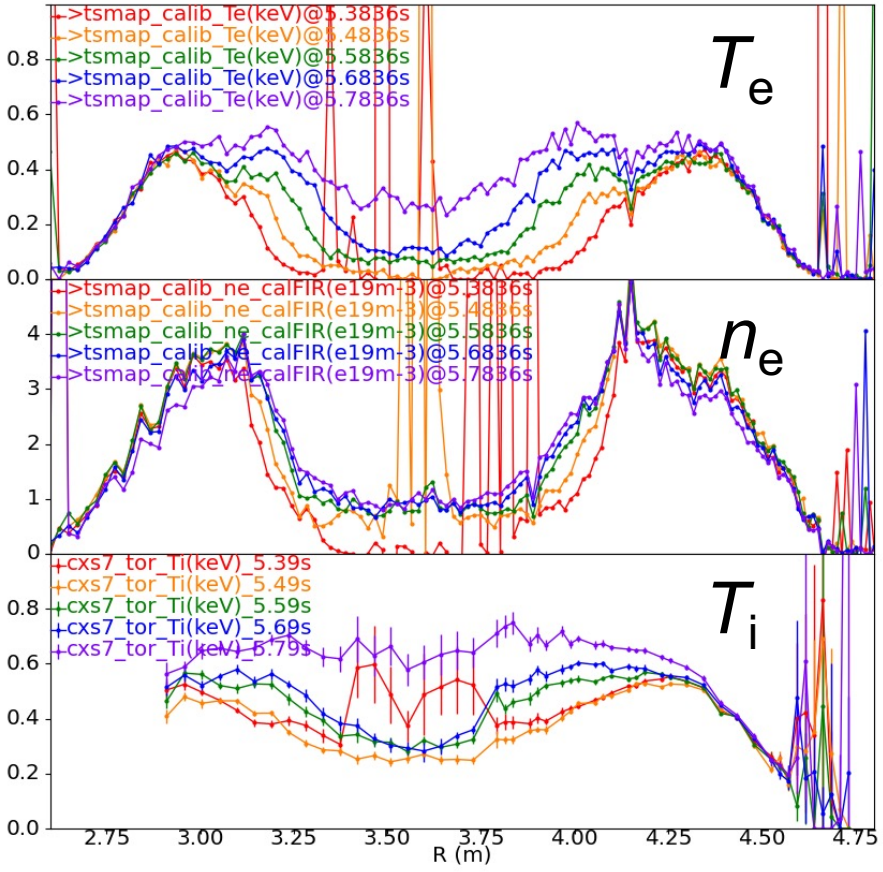

Fig. 2

#172274 (3.75 m)

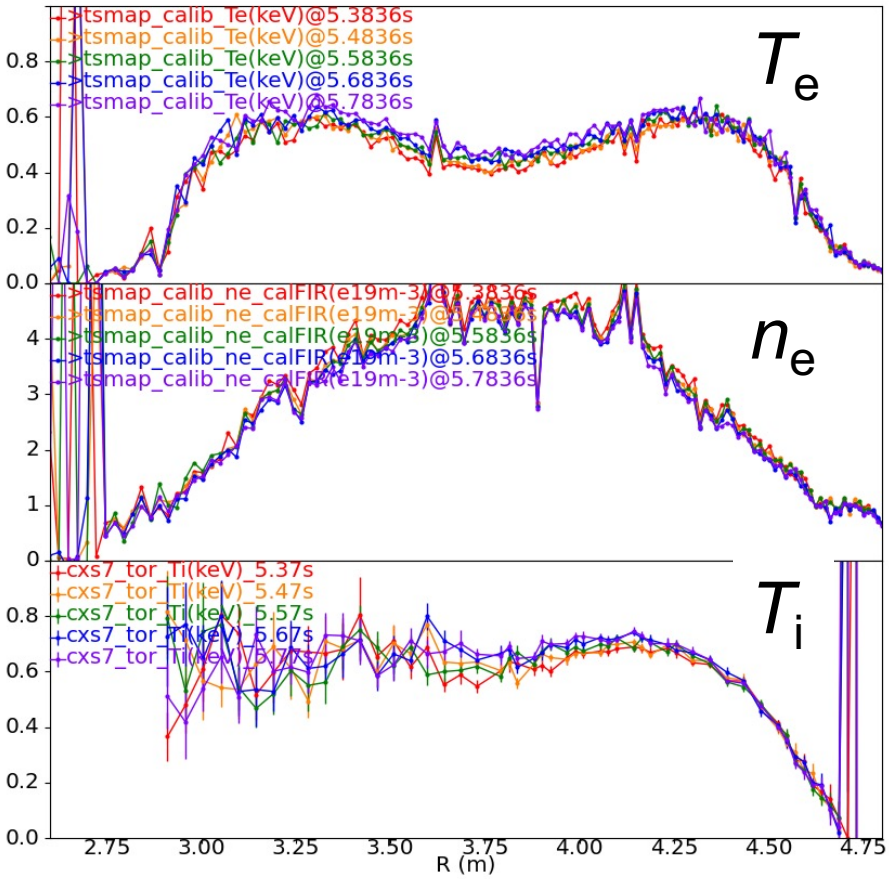

Fig. 3