Date: Nov. 10, 2021  
Time: 15:15 – 16:30  
Shot#: 172257 – 172275 (19 shots)  
Prior wall conditioning: No  
Divertor pump: ON  
Gas puff: D₂  
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 x 10¹⁶  

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

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 \(R_{\text{ax}}=3.75 \text{ m configuration.}\)
➢ 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 \(n_e \sim 1 \times 10^{19} \text{ m}^{-3}\) 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 \(R_{\text{ax}}=3.75 \text{ m and shallow holes are only observed (Fig. 3).}\)
Fig. 2

#172260 (3.6 m)

Fig. 3

#172274 (3.75 m)