(TG2) Turbulence Topical Group Report

Oct. 20, 2022 (A. Shimizu)

Date: Oct. 19, 2022
Time: 13:10 - 14:40
Shot#: 180856 – 180883 (28 shots)

Prior wall conditioning: NO
Divertor pump: ON
Gas puff: H2, He
NBI#(1, 2, 3, 4, 5)=gas(H, H, H, H, H)=P(1.7, 3.8, 3.2, 3.7, 4.3)MW

ECH(77GHz)=ant(5.5-Uout (or 1.5U), 2-OUR)=P(703, 792)kW
ECH(154GHz)=ant(2-OLL, 2-OUL , 2-OLR)=P(723, 799, 825)kW
ECH(56GHz)=ant(1.5U)=P(-)kW
ICH(3.5U, 3.5L, 4.5U, 4.5L)=P(-, -, -, -)MW
Neutron yield integrated over the experiment = 3.3×10^{12}

Remarks:

Topics

1. Isotope effects on plasma confinement properties and nonlinear interaction of multi-scale turbulence (Y. Xu, J. Cheng, W. Li, M. Kobayashi)

Experimental report of Oct. 19, 2022

(Y. Xu, W. Li, H. Zhou, J. Cheng, M. Kobayashi, S. Ohdachi, A. Shimizu)

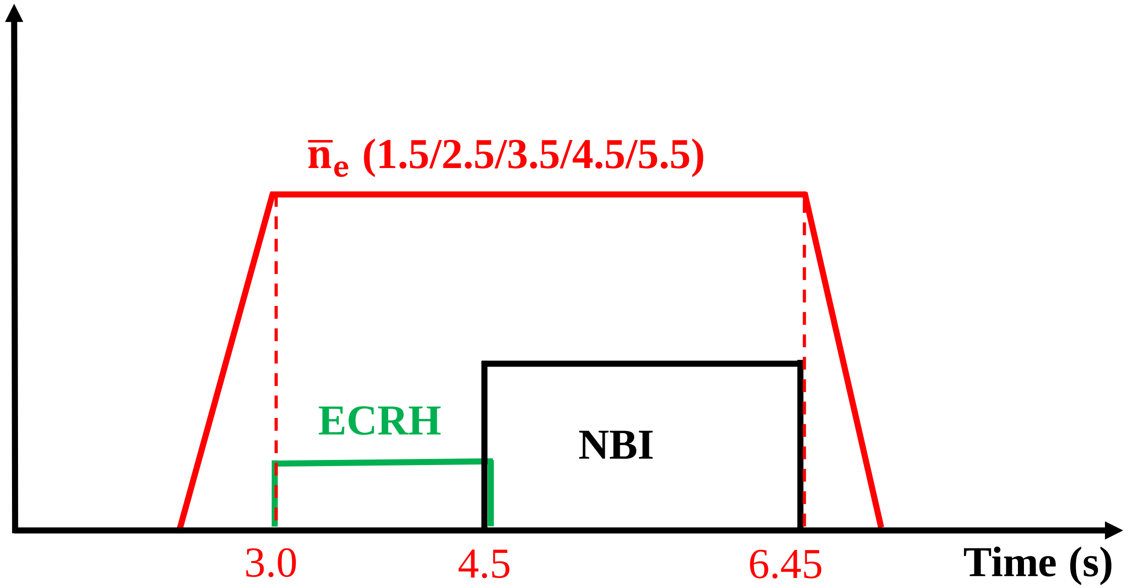
Title: **Isotope effects on plasma confinement properties and nonlinear interaction of multi-scale turbulence in LHD**

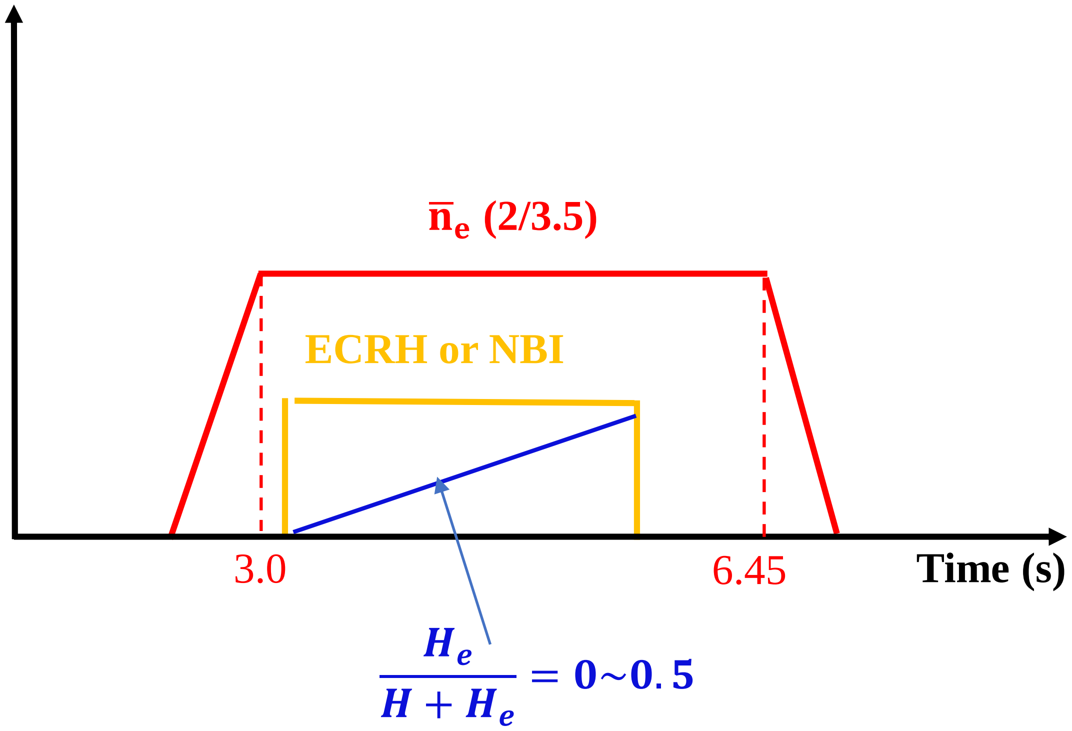
Experimental conditions: (R_{ax}, B_t) = (3.60 m, 2.75 T, CCW), γ = 1.2538, and B_q = 100 %

Shot-plan:

Discharge number	P_{heat} (MW)	$\bar{n}_e$ (10^{19} m^{-3})	Plasma conditions	Main diagnostics
1	**ECRH (~1.5) / NBI (~4)**	1.5	H dominant	GPI, PCI, reflectometer
1		2.5		
1		3.5		
1		4.5		
1		5.5		
1	**ECRH (~3.6) / NBI (~7)**	1.5		
1		2.5		
1		3.5		
1		4.5		
1		5.5		
1	**ECRH (~1.5)**	2	H dominant + He (scan) $(n_{He}/(n_H + n_{He}) = 0 \sim 0.5)$	
1		3.5		
1	**ECRH (~3.6)**	2		
1		3.5		
1	**NBI (~4)**	2		
1		3.5		
1	**NBI (~7)**	2		
1		3.5		

Experimental report of Oct. 19, 2022



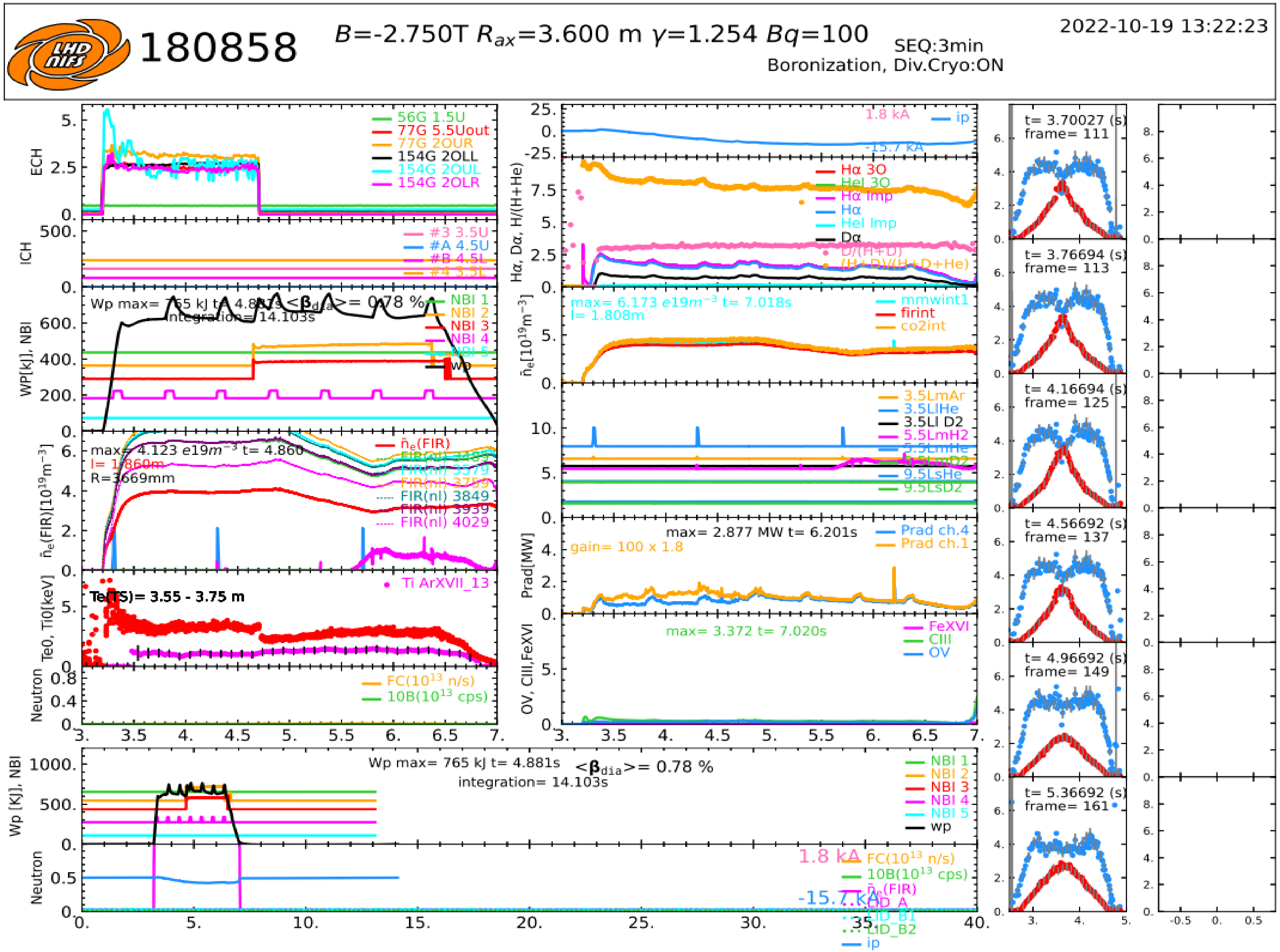


Experimental report of Oct. 19, 2022

Total shot numbers: 28 Effective numbers: 22

Shot	P_{ECRH} (MW)	P_{NBI} (MW)	$\bar{n}_e$ (10^{19} m^{-3})	Discharge plasma conditions
180866			1.5	
180865			2.5	
180859/64	3.8	7.0	3.5	H dominant
180860/63			4.5	
180861/62			5.5	
180867			1.5	
180868			2.5	
180869	1.5	3.0	3.5	H dominant
180871			4.5	
180873			5.5	
180874/76	1.5			
180881/82		3.0	4.5	H dominant + He ($n_{He}/(n_H+n_{He}) = 0 \sim 0.5$)
180878/79/80/83	1.5	3.0		

Experimental report of Oct. 19, 2022



Experimental report of Oct. 19, 2022