

(TG1) Multi-ion Plasma group report



Oct. 20, 2022 (H. Kasahara)

Date: Oct. 19, 2022

Time: 15:00~16:30

Shot# 180884~180913(30shots)

Prior wall conditioning: No

Gas puff: H₂, He, N₂, Ne, Ar, Pellet: No

LID: Yes(3000A, 6O-extend)

NBI(1, 2, 3, 4, 5) = gas(H, H, H, H, H) = P(1.9, 4.4, 3.4, 5.6, 3.8) MW

ECH(56GHz, 1.5U) = P(-) MW

ECH(77GHz, 5.5U, 2Our) = P(0.70, 0.79) MW

EH(154GHz, 2Oll, 2Oul, 2Olr) = P(-, 0.80, 0.83) MW

ICH(38.47MHz, 3.5U, 3.5L, 4.5U, 4.5L) = P(-, -, -, -) MW

Neutron yield integrated over the experiment = 2.5×10^{12}

Topic

1. Study of poloidal and toroidal asymmetries during impurity seeding (B.Peterson)

Toroidal a/symmetry with N₂ seeding at R_{ax} = 3.75 m, 2.64T (CCW) (B. Peterson)

Background and objective:

- Recently bolometers were installed at ports 7-O and 10-O in addition to 3-O, 6.5-L and 8-O.
- N₂ seeding experiments were performed on Jan. 8, 19, 2021 at R_{ax} = 3.6 m and -B, B and on October 19, 2021 at R_{ax} = 3.9 m and +B and -B on February 2, 2022 and at 3.75 m and +B on October 5, 2022 to investigate the toroidal asymmetry of radiation.

Experimental condition:

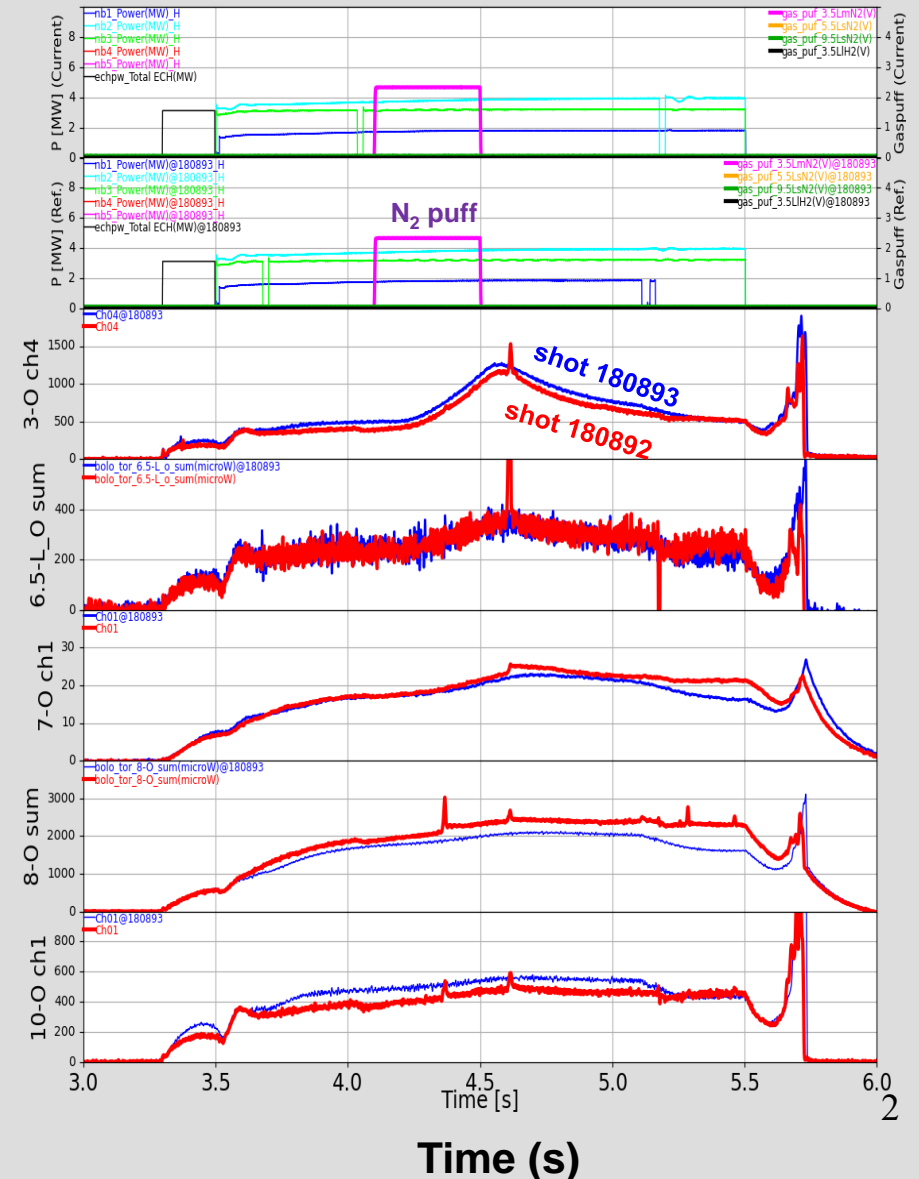
- NBI #1, 2, 3 some shots taken without #1 to compare with Oct. 5
 - R = 3.75 m, B = -2.64 T
 - density is held constant during impurity puff at $n_{e, bar} = 4 \times 10^{19}/m^3$
 - LID coil applied every other shot with 6-0 expansion (-2350, -1680, -3040 A)
 - Reproduce the puffing conditions for the successful shots of 2022.10.5:
 - #1808**86, 88, 99, 902, 905** : reference shot, no N₂ puff
 - #1808**92, 93** : N₂ puff from port 3.5-L,
 - #1808**91, 94, 98, 901** : N₂ puff from port 5.5-L
 - #1808**95, 900, 903, 910** : N₂ puff from port 9.5-L
 - #180**907** : N₂ puff from port 3.5-L, 5.5-L, 9.5-L
 - #180**911, 13**: Ne puff from port 5.5-L (both collapsed)
- red** – LID was applied, **bold** = best shot

LHD180892

(Rax, gamma, Bq) = (-2.64, 3.75, 1.2538, 100) GAS: H2

2022/10/19 15:23

THEME: [(1) Multi-Ion] Study of poloidal and toroidal asymmetries during im



Toroidal a/symmetry with N₂ seeding at R_{ax} = 3.75 m, 2.64T (CCW) (B. Peterson)

Background and objective:

- Recently bolometers were installed at ports 7-O and 10-O in addition to 3-O, 6.5-L and 8-O.
- N₂ seeding experiments were performed on Jan. 8, 19, 2021 at R_{ax} = 3.6 m and -B, B and on October 19, 2021 at R_{ax} = 3.9 m and +B and -B on February 2, 2022 to investigate the toroidal asymmetry of radiation.

Experimental condition:

- NBI #1, 2 (NBI #3 not operational)
 - R = 3.75 m, B = -2.64 T
 - density is held constant during impurity puff at $n_{e,bar} = 4 \times 10^{19}/m^3$
 - LID coil applied every other shot with 6-0 expansion (-2350,-1680,-3040 A)
 - Reproduce the puffing conditions for the successful shots of 2022.10.5:
 - #179830, **31**, **55** : reference shot, no N₂ puff
 - #179832, **33** : N₂ puff from port 3.5-L,
 - #179834, **41** : N₂ puff from port 5.5-L
 - #179836, **37** : N₂ puff from port 9.5-L
 - #179844, **50**, **57** : N₂ puff from port 3.5-L, 5.5-L, 9.5-L
 - #179852, 54, 56 : Ne puff from port 3.5-L,
- red** – LID was applied, **bold** = best shot

