

# (IA) Instability & Anisotropy Session report



Apr. 19, 2024 (Y. Takemura)

Date: Apr. 18, 2024

Time: 10:30 - 12:15

Shot#: 189793-189829 (36 shots)

Prior wall conditioning: H<sub>2</sub>, Divertor pump: On

Gas puff: H<sub>2</sub>, Pellet: None

NBI#(1, 2, 3, 4, 5)=gas(H, H, H, H, H)=P(4.4, 4.1, 4.1, 3.6, -)MW

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

ECH(77GHz)=ant(5.5-U, 2-OUR)=P(-, -)MW

ECH(154GHz)=ant(2-OLL, 2-OUL, 2O-LR)=P(-, -, -)MW

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

## Topics

1. Collisionality dependence of shielding threshold of external RMP (Y. Takemura)

# Collisionality dependence of shielding threshold of external RMP (Y. Takemura)

Shot #:189793-189129

Experimental conditions: ( $R_{ax}$ , Polarity,  $B_t$ ,  $\gamma$ ,  $B_q$ ) = 3.60, CW, 0.90/0.75, 1.129, 100

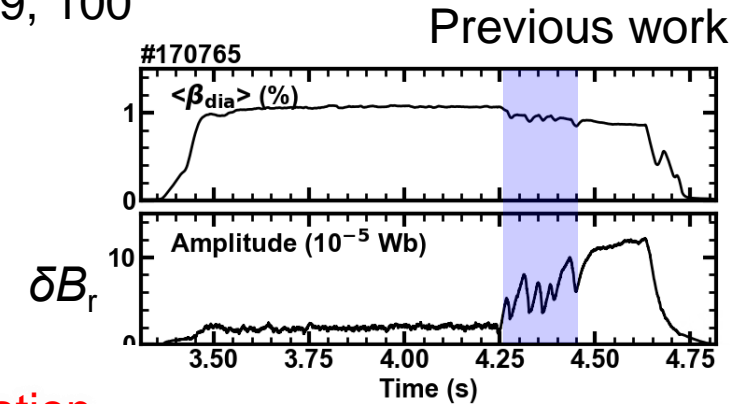
## Background and motivation:

- In the high- $A_p$  configuration of the LHD, the sawtooth oscillation in the beta signal is synchronized with changes in the  $m/n=1/1$   $B_r$  amplitude.
- $\delta B_r$  oscillation is more likely to occur in the high collisionality regime.
- The onset mechanism could be related to the collisionality dependence of threshold for penetration and shielding of external RMP (error field).

→ Aim to obtain these thresholds in the low  $\gamma$  configuration.

## Results:

- Obtain penetration (shielding) thresholds with various densities and ramp-up (ramp-down) RMP.
- The collisionality dependence of the penetration/shielding thresholds will be summarized and consider its relationship with the sawtooth oscillation in the future.



Penetration  
threshold

