

Research proposal on HL-2A: Effect of neoclassical tearing mode on the passing fast ion re-distribution

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Designed Discharge (A) :

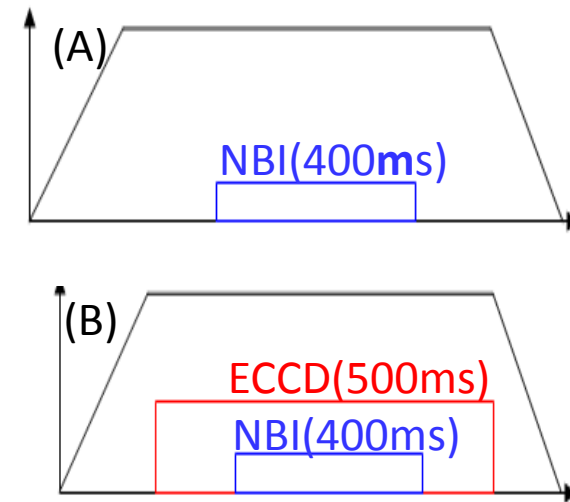
- 5 shots with repeatable plasma discharge parameters, and the typical TM/NTM instability occurs during discharge
- Injected NBI with power 1.5MW
- Acquire the FIDA raw data with injected NBI and with strong instability

Designed discharge (B) :

- adjust ECCD power to modulate NTM amplitude
- Injected NBI with power 1.5MW
- Obtain the FIDA raw data for the cases with different NTM amplitude or with quiet plasma
- Required about 10 shots

Goal:

- (1) Based on Discharge (A), further validation of FIDA signals through comparison the measured data with the simulation prediction
- (2) The effect of the NTM on the passing fast ion transport



Required heating schemes	ECRH/ECCD:1.5 MW, 500 ms; NBI: 1.5 MW, 400 ms;
Essential diagnostics	Mirnov signal ;Soft X-ray ;Thomson scattering; CXRS;Multi-channel ECE, ECEI; fast ion loss probe;Tangential-FIDA
Plasma parameters	Plasma current: ~168 kA, Diverotr line density: (0.5-1.0) ×10¹⁹m⁻³