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# Use of HHFW heating to increase the non-inductive current fraction in NBI-produced H-mode plasmas with triggered ELMs to control impurity buildup

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# Use HHFW heating to increase non-inductive current fraction in NBI-produced H-mode plasmas

- Reproduce and develop results of XP-829 (May 08) in which HHFW successfully heated electrons in H-mode LSN plasmas with NBI
- Optimize  $P_{\text{NB}} T_e(0)^{3/2} / n_e(0)$  during HHFW and document conditions
  - Optimize LITER rate to control ELMs
  - Increase NB power to 4MW, possibly 6MW
  - At highest NB power with clear  $T_e(0)$  rise, increase HHFW power
- In parallel, apply ELM-pacing if  $P_{\text{rad}}$  or  $n_e$  is rising
  - Magnetic triggering
  - Notch HHFW power
- Prerequisites
  - $B_T$  to 0.55T; LITERs; NBI
  - HHFW system ready to couple >3MW, preferably in CD phasing
  - EFC/RWM system with odd parity and qualified for up to 2kA pulsed waveforms
- Experimental time: 39 – 45 shots
- Addresses Research Milestone R(12-3): Assess access to reduced density and collisionality in high-performance scenarios