NSTX

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XP 909 - dependence of L-H Power threshold on X-point radius

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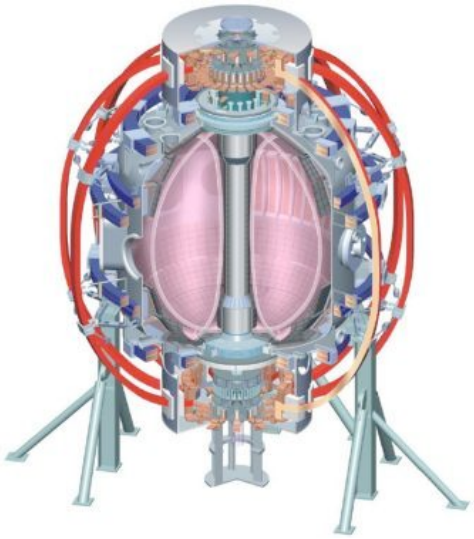
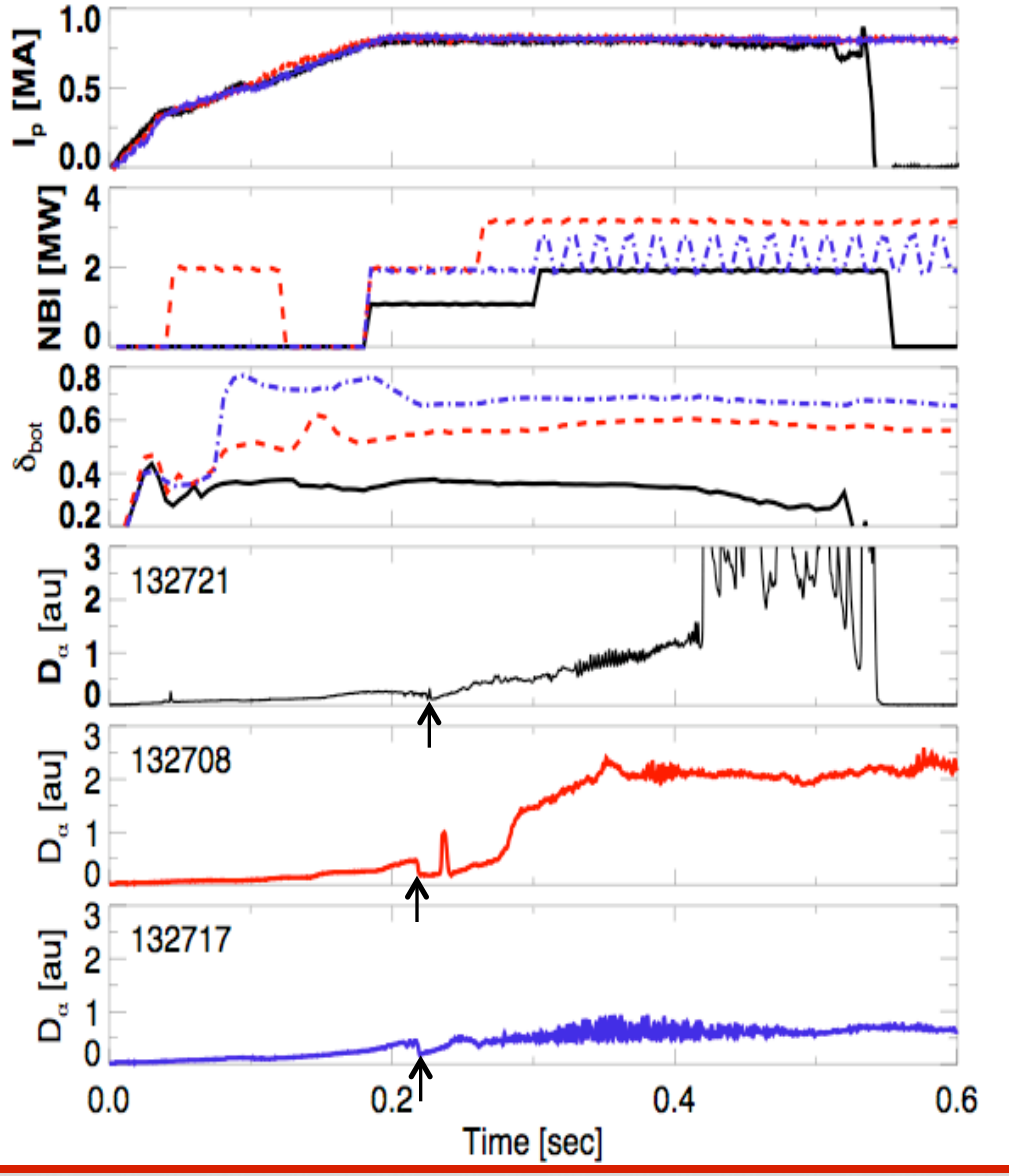
NSTX Results Review
Princeton, NJ
Sept. 15-16, 2009

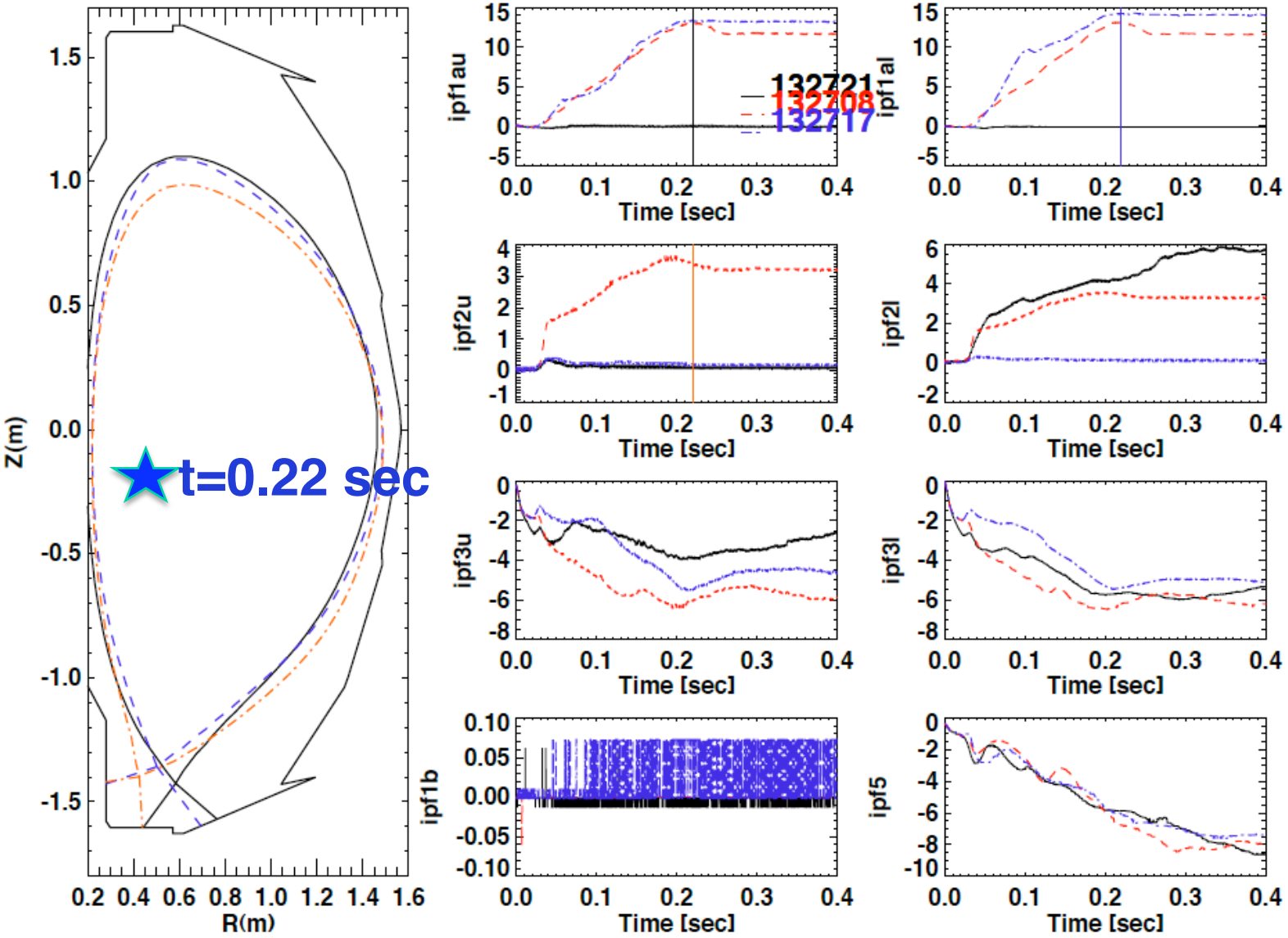


Summary: P_{LH} lowest at low δ

- Achieved three different δ_{bot}: 0.4, 0.55, 0.7
- P_{LH}^{NBI} ~ 1 MW for δ_{bot}~ 0.4, ~ 2 MW for other two
  - L-mode comparisons shown in following slides
- Transitions all occurred after I_p flat-top
  - Times indicated by arrows
- NBI pre-heat used in one case but separate experiment showed pre -heating did not affect P_{LH}
- To do: compare with XGC

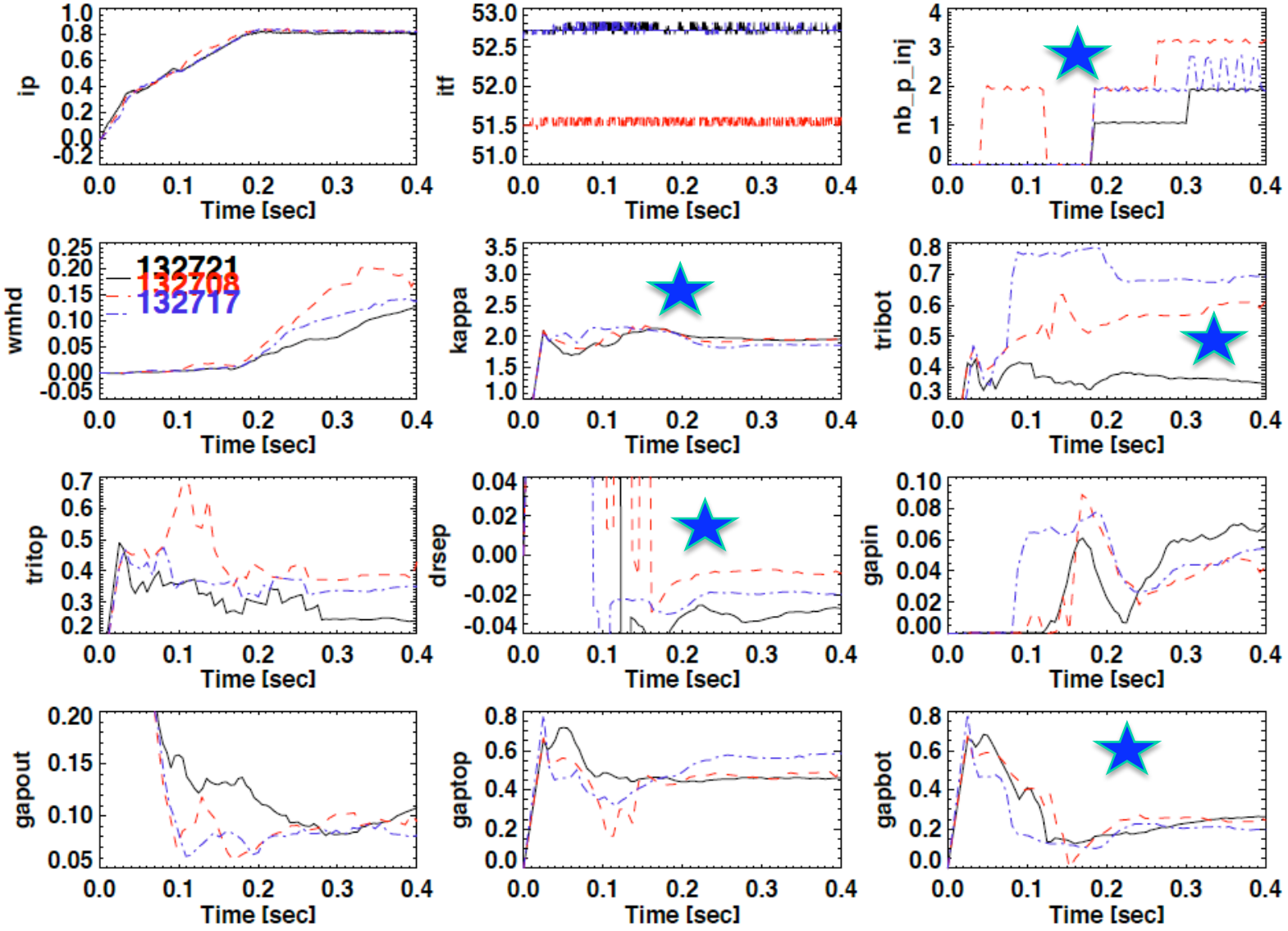


Three X-point radii and triangularities achieved

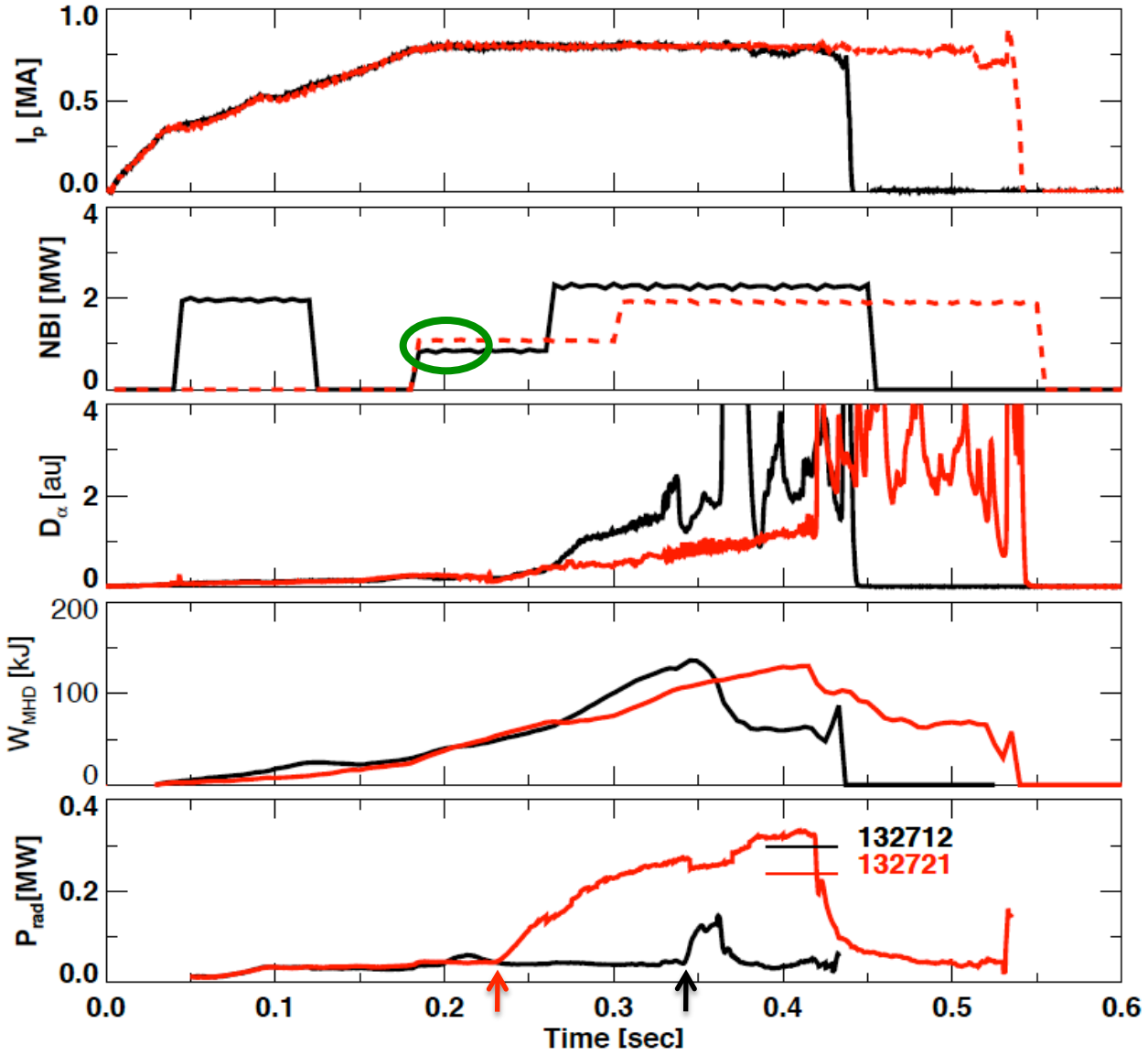


κ, bottom gap relatively well matched at 0.2 s, but δ_r^{sep} different

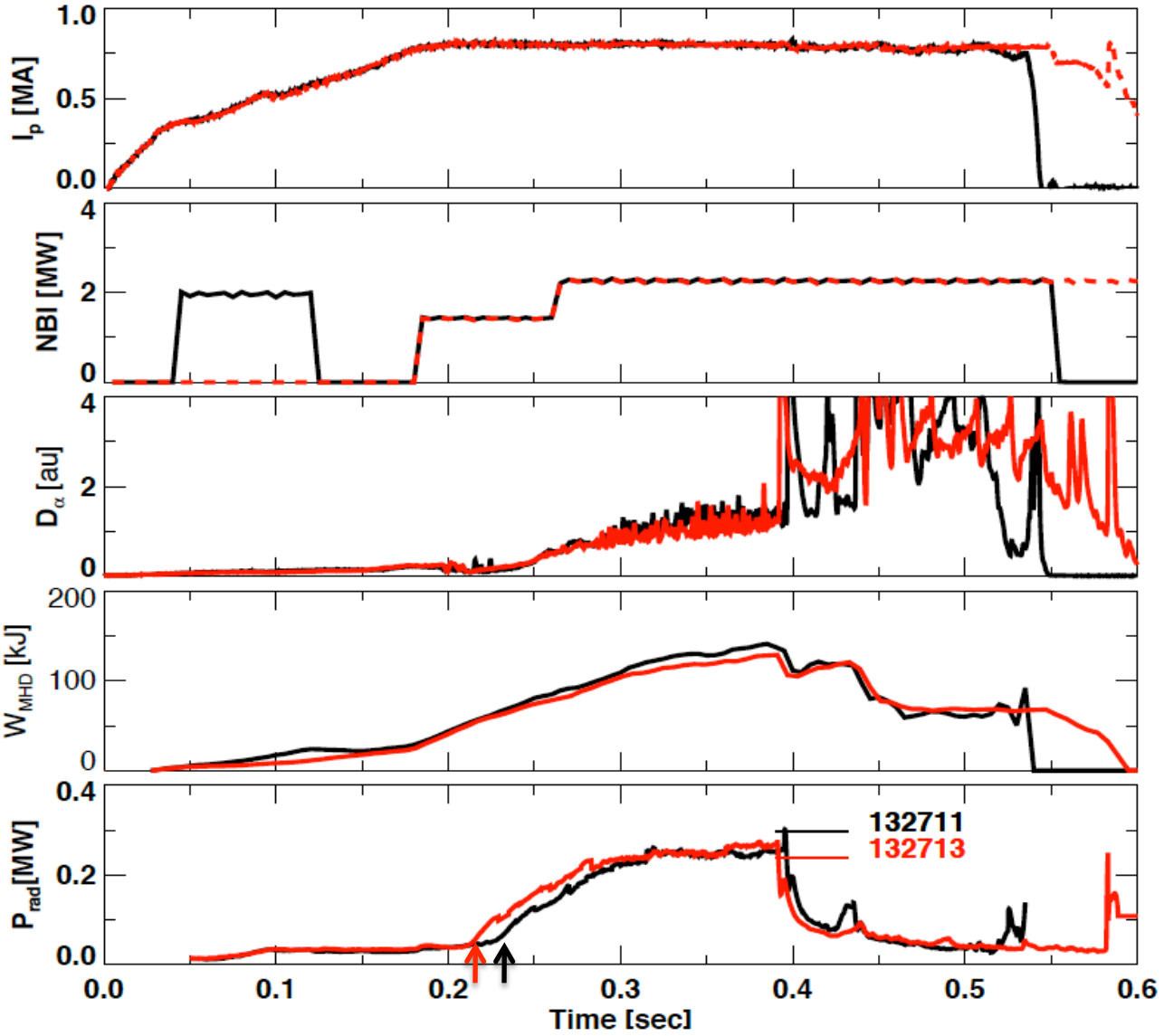
P_{LH}^{NBI} lowest for $\delta_L \sim 0.4$ and comparable for higher δ_L



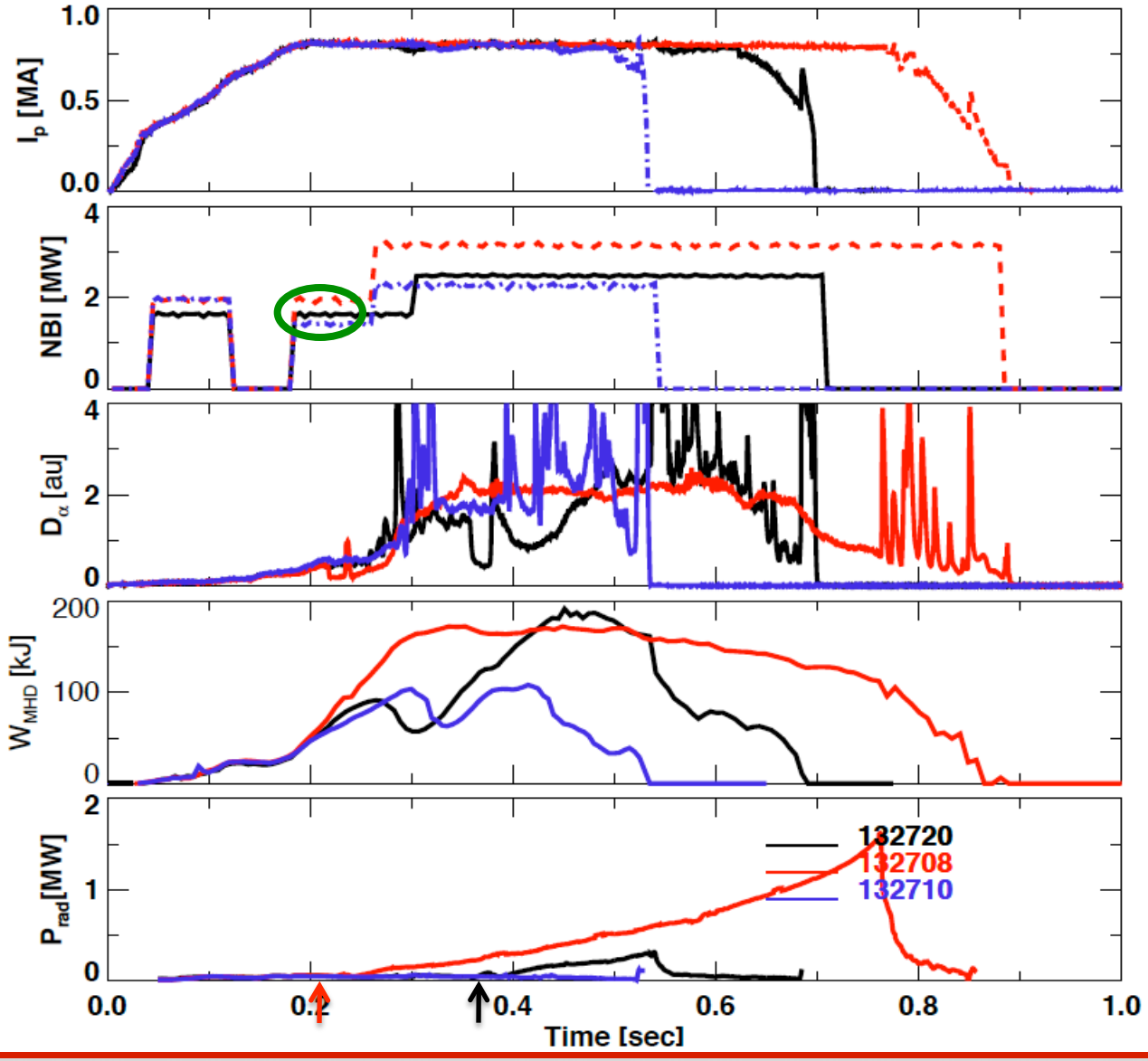
Low $\delta_L \sim 0.4$ has $P_{LH}^{NBI} < 1.1$ MW



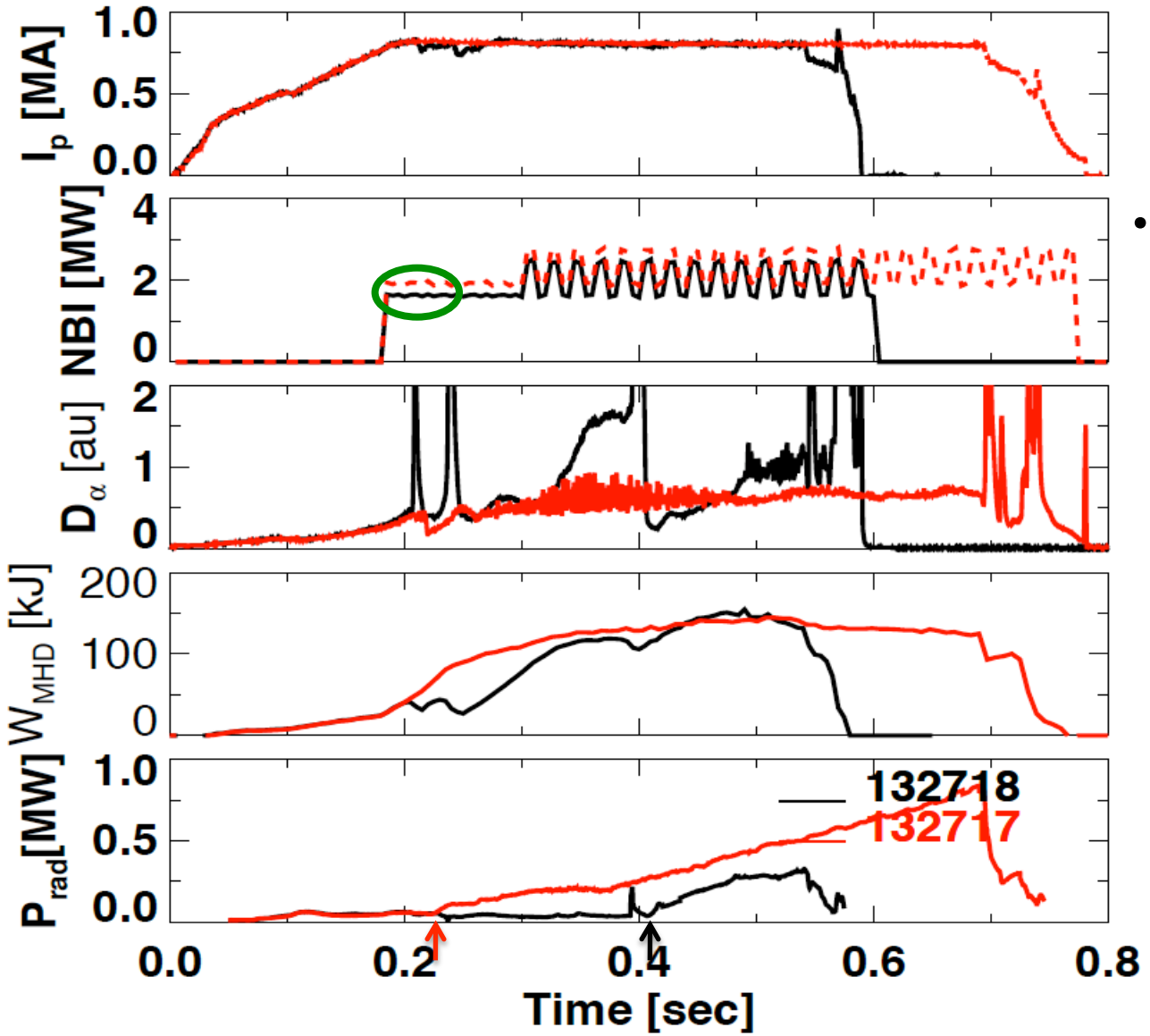
Early heating does not affect P_{LH}^{NBI} (Low $\delta_L \sim 0.4$)



Medium $\delta_L \sim 0.55$ has $P_{LH}^{NBI} \leq 2$ MW



High $\delta_L \sim 0.7$ also has $P_{LH}^{NBI} \leq 2$ MW



- Locked modes affected LH timing in 132718