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Comment on Distant RMP Coils

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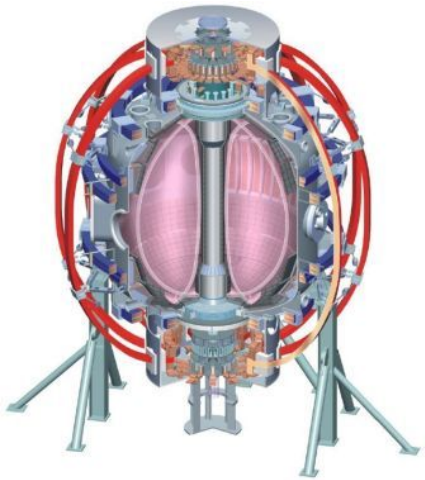

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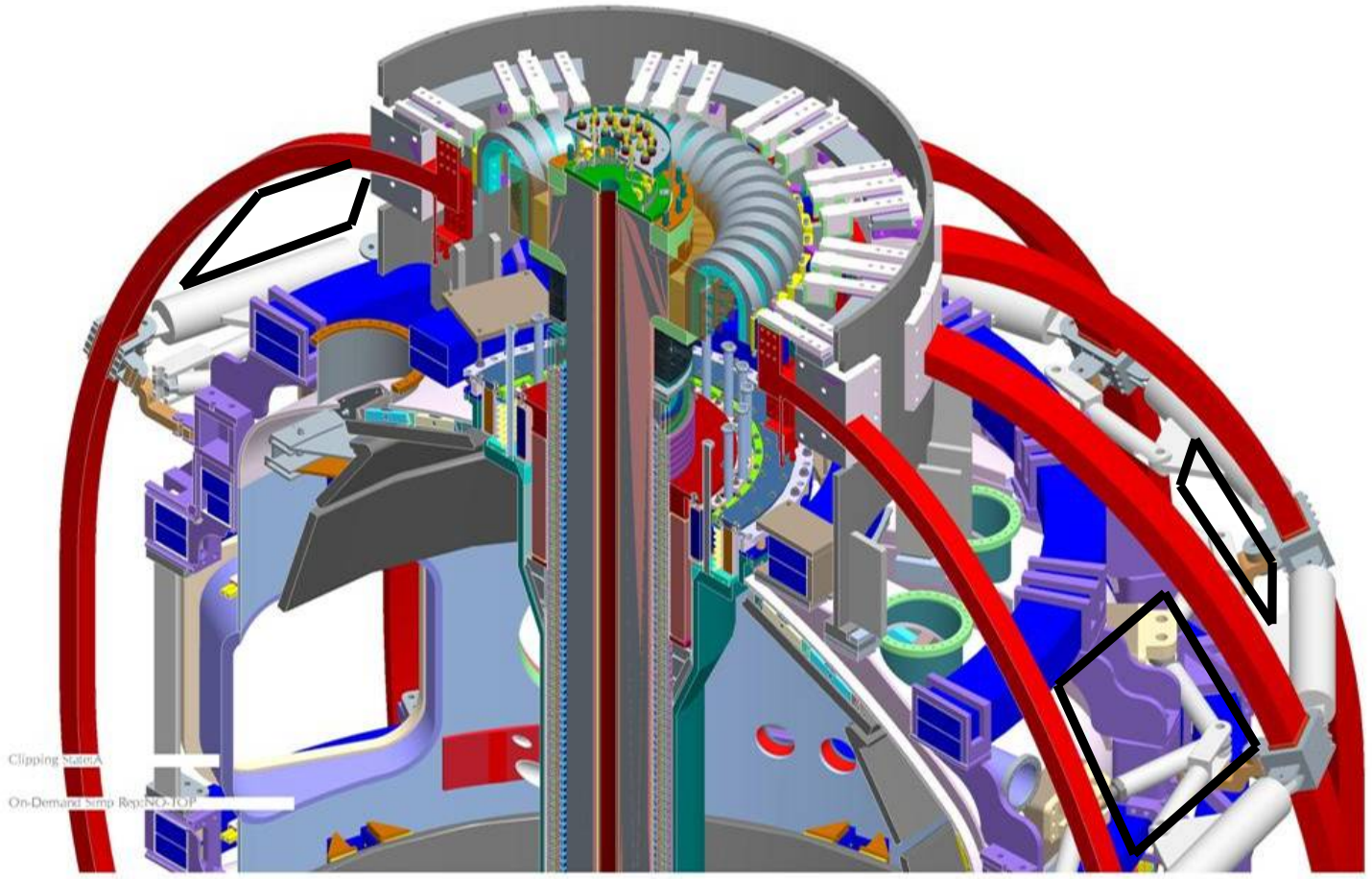
NSTX Could Explore a Unique Niche With Higher-n "Distant" RMP/RWM/EFC Coils

- Earliest you can imagine RMP coil upgrade is ~2016.
  - Two years after first plasma.
- D-IIID, MAST, ASDEX-Upgrade will have many years of experience with close fitting, off-midplane coils.
- Those coils are VERY difficult to implement in a DEMO like environment.

- Define "Distant" to mean a distance, normalized to R_0 or a, that a DEMO or CTF could use.
- Off midplane, distant coils are uncommon.
  - JET has n=2 coils outside the vessel.
  - D-IIID has midplane C-coil.
- State-Space RWM controller has shown promise for RWM control with more distant coils.
  - Oksana's thesis work.
- Research with these coils might be more directly transferable to to next-step devices.

- Easier to implement than internal coils: No high-current feedthroughs, easier maintenance, no impact on vacuum, react forces against other coils and their supports.
- Harder to implement than internal coils: More random interferences with diagnostics, surely require higher current levels, forces transferred to other coils and their supports.

Pre-Conceptual Idea For Locating Them



SPG Suggestion: As the internal coil physics designs are developed, also consider in tandem a distant coil design for comparison.