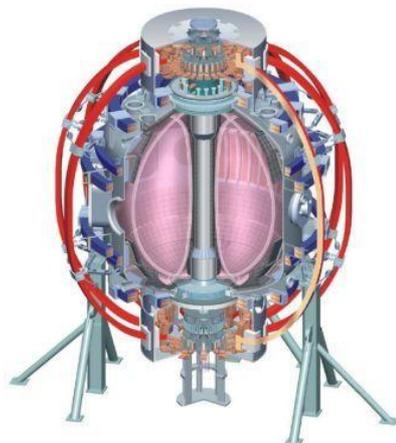


Search for Resonant ELM Frequency Behavior as a Function of q_{95} With 3D Fields

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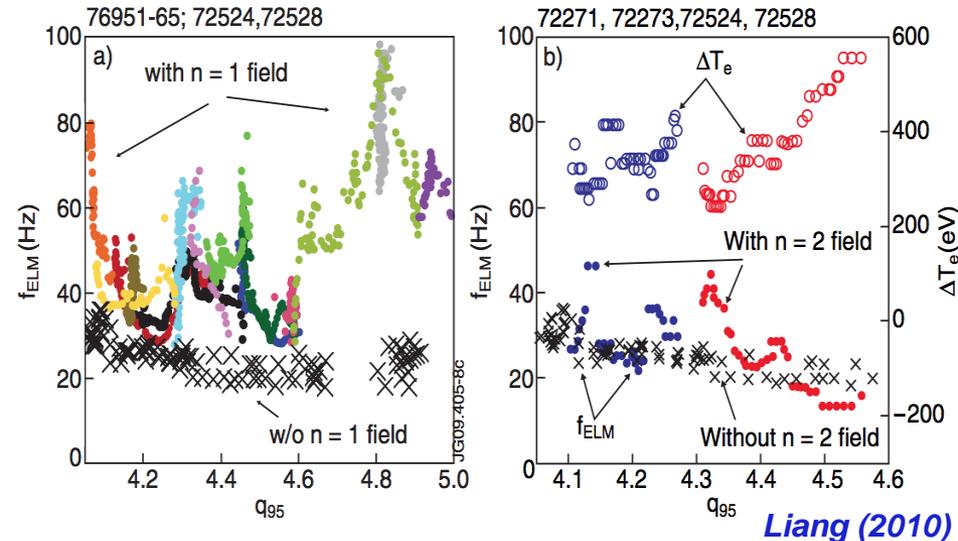
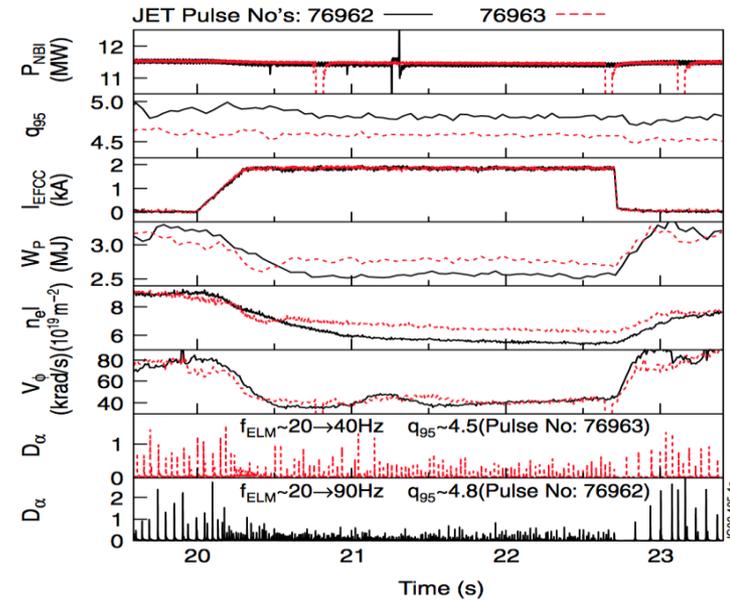


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Background and Motivation

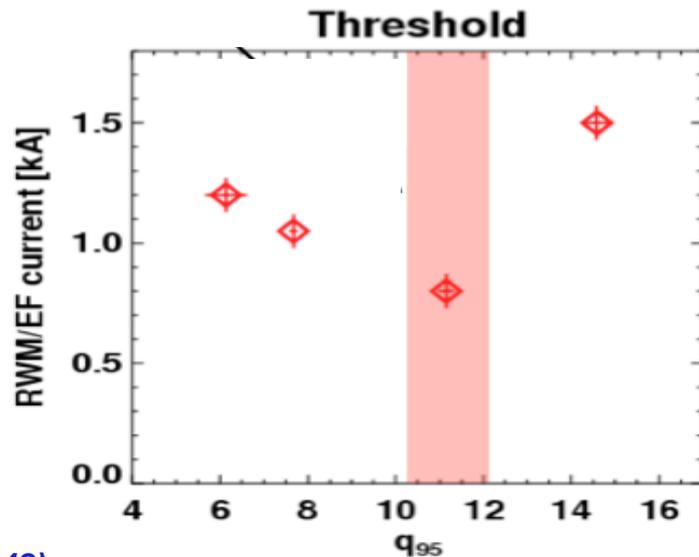
- Experiments on JET show a strong increase in ELM frequency in narrow q_{95} windows during 3D field application
- Structure is very fine, with $\Delta q_{95} \sim 0.2-0.3$
- Stronger effect observed for $n=1$ field, but resonant field component was $\sim 3x$ smaller in $n=2$ configuration



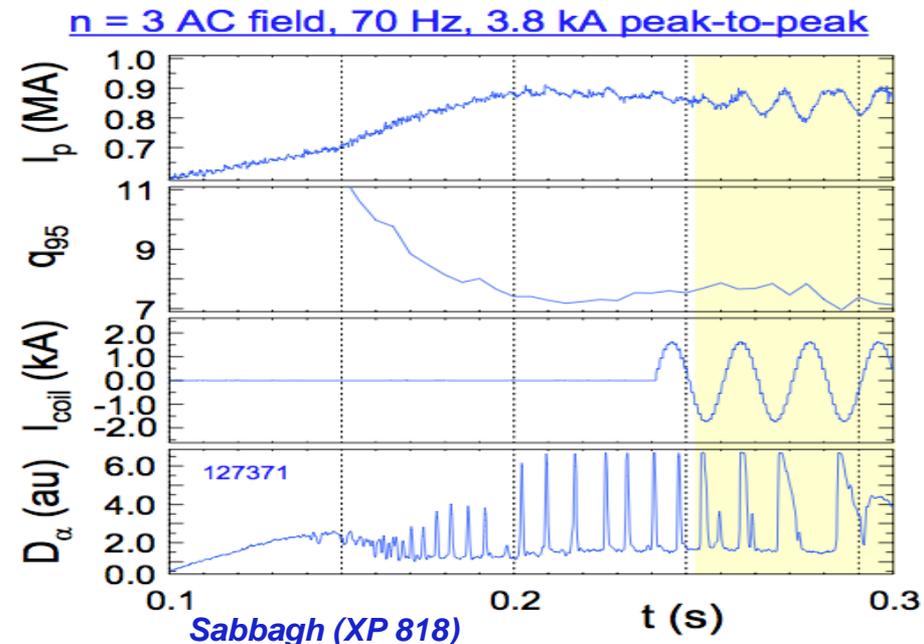
Liang (2010)

- Goal: Look for resonant behavior in f_{ELM} vs q_{95} with 3D fields on NSTX
- Operate in ELMy H-mode, slowly ramp q_{95}
 - Start with robustly ELMy shot at $q_{95} \sim 10$, near minimum of ELM triggering threshold
 - Ramp down q_{95} from 10-9; ramp over as long a period as possible
- Apply DC 3D fields to look for resonance effect
 - Want biggest field that plasma tolerates, might need multiple shots at each q_{95}
 - Repeat with q_{95} ramp up from 9-10
- Replace with $n=2$ or $n=2+3$ fields
- Repeat with q_{95} ramp from 9-8, then 11-10, follow steps above

- 3D field triggering threshold dependence on q_{95} has been observed (XP 1048)
- Some ELM frequency dependence on 3D fields has been seen at fixed q_{95} (XP 818)



Park (XP 1048)



Sabbagh (XP 818)