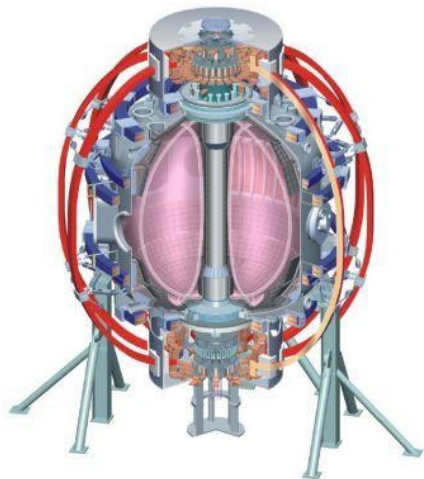


Impact of 3-D fields on pedestal profiles without and with lithium

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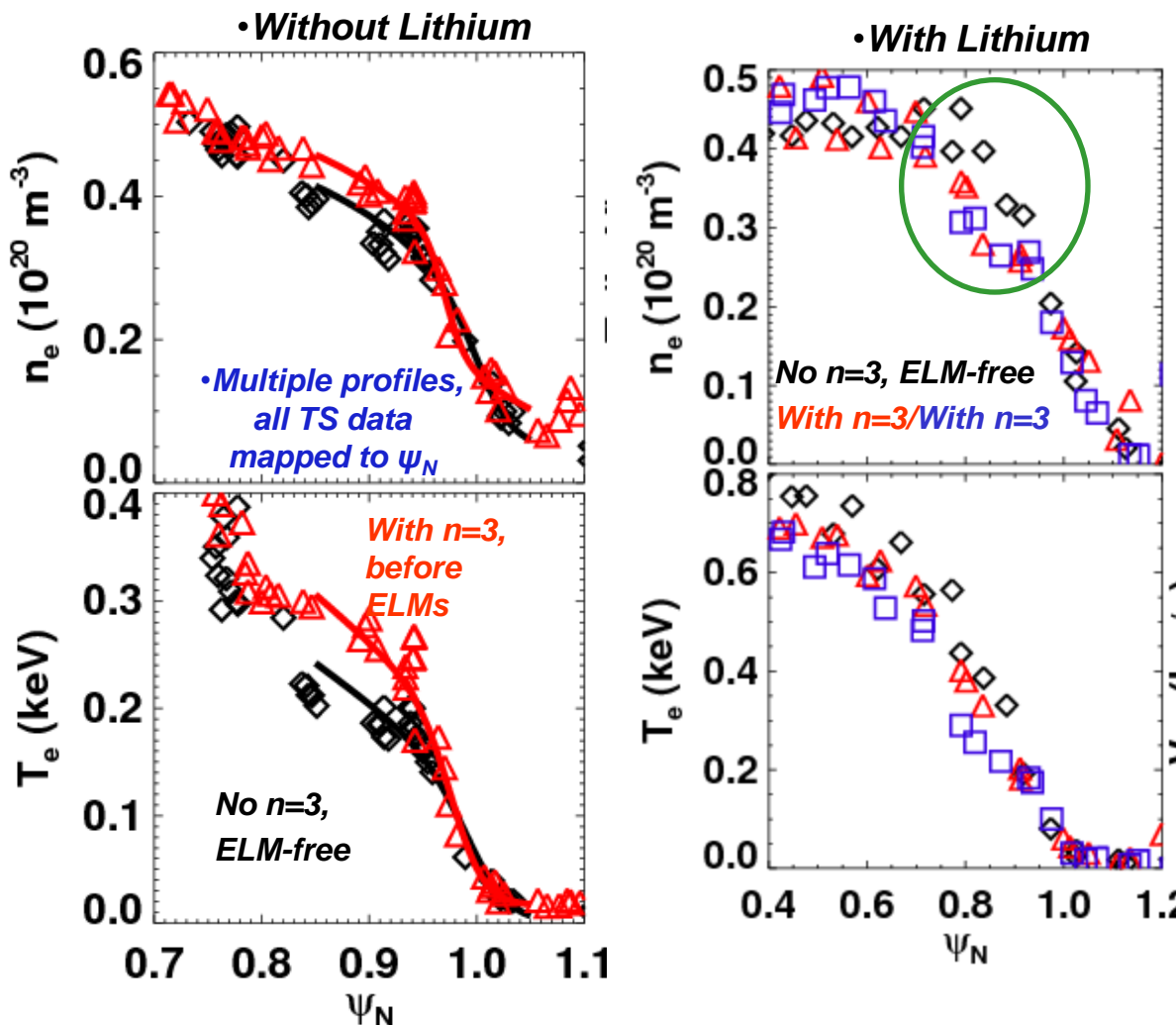


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Pedestal profiles show varying response to n=3 field application with/without lithium

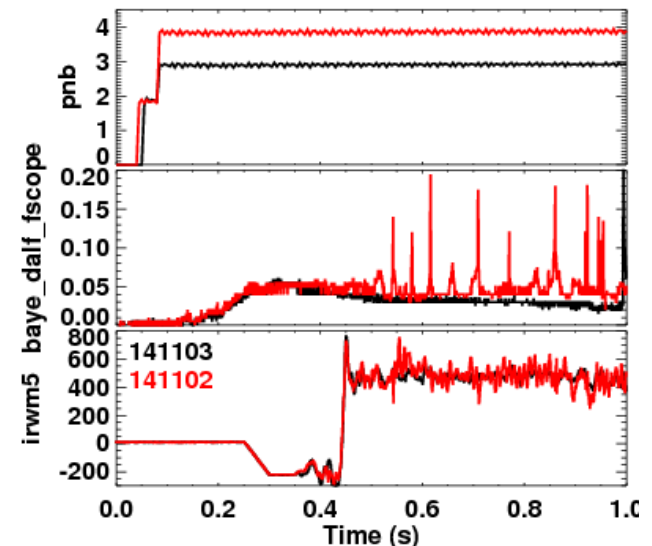
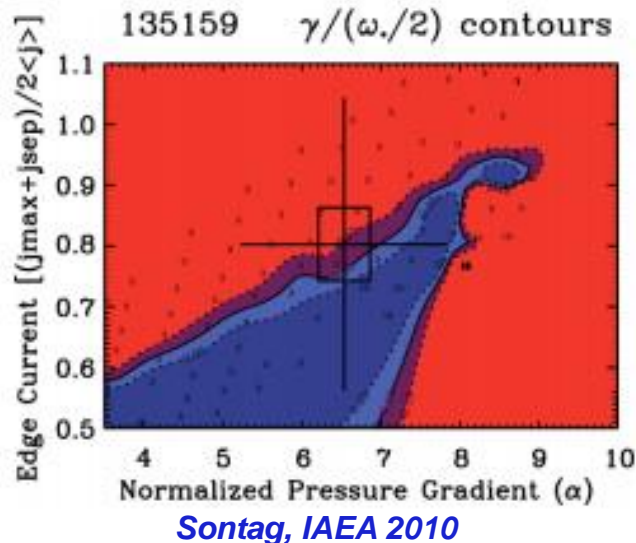
Profiles compiled from several shots:
 Black before, colors after n=3 (but before ELMs)



- *Without lithium*
 - *No strong change in density (natural rise same as control shot)*
 - *T_e , pressure gradient increases after n=3 field is applied*
- *With lithium*
 - *Flattening in n_e seen from $\psi_N \sim 0.8-0.9$*
 - *Also seen in $T_e \rightarrow$ island?*

Response of profiles to 3D fields with/without lithium will be revisited, with adjustments

- Lower-triangularity shape will be used to connect to DIII-D results
 - Most NSTX data at $\delta \sim 0.7-0.8$, DIII-D $\delta \sim 0.25-0.55$
 - NSTX typically runs near peeling boundary, DIII-D near junction of peeling/ballooning boundaries
 - Reduce δ (to ~ 0.4) to get close to DIII-D in stability space
- Measure profile changes for multiple power levels
 - Intuitively expect to change proximity to stability limits-some evidence exists that it does
 - β_N varied \rightarrow changes response to RMPs in DIII-D
 - Rotation varied \rightarrow expected to play role in shielding



Run plan

- 1 day XP to measure change of pedestal profiles due to 3D fields
- Reload 135155/59: low triangularity ($\delta \sim 0.4$) operating closer to ballooning boundary
- Measure pedestal profiles without and with $n=3$ fields applied
 - Field strength tweaked to trigger ELMs ~ 50 ms after application
 - $n=3$ 100ms on, 200 off, 100 on again
 - Multiple shots for ELM syncing (if necessary), maximize profile data
- Four scenarios desired:
 - No lithium, $P_{\text{NBI}}=3$ MW
 - No lithium, 5 MW
 - Yes lithium, 3 MW
 - Yes lithium, 5 MW