



Topic 21 experiment

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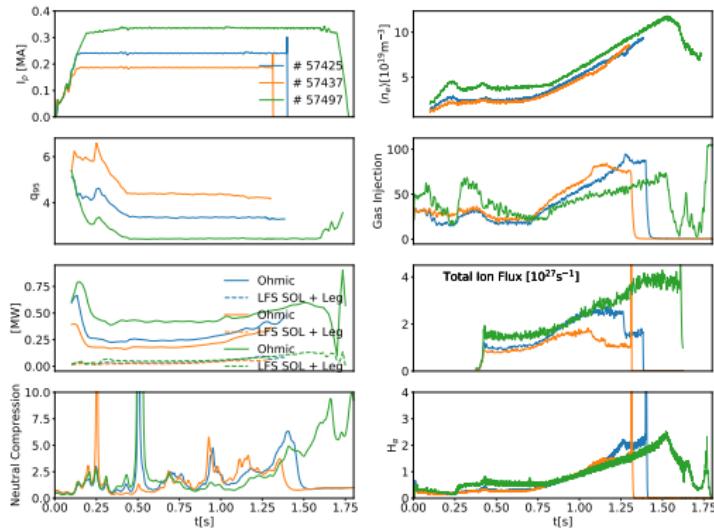
- ✓ 2017 **objectives** listed after the General Planning Meeting
 1. Provide cross-machine L-Mode shoulder dependence on current both at constant Bt and at constant q_{95}
 2. Establish robust scenario for density shoulder profile in H-mode and establish dependence on fuelling/neutral profiles/divertor condition
 3. Study the role of ELM regimes, neutral compression, and particle density in filamentary transport and related shoulder formation.
 4. Identify the contribution of collisionality and seeding on filamentary transport and related shoulder formation.
 5. Determine the effect of filaments and shoulder formation on target heat loads in different Hmode plasmas.
- ✓ We still have a # 18 Shots available between Week 43 and 44

Accomplished program with respect to foreseen one



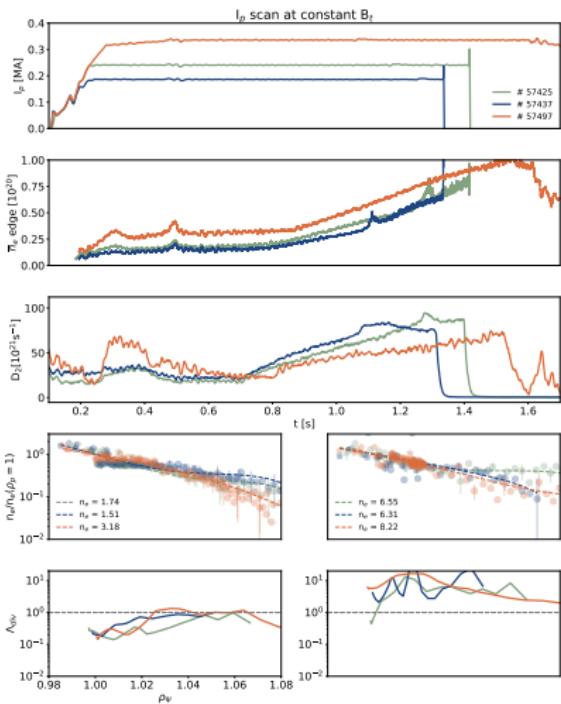
1. Shape from 57088, $I_p = 245$ kA, Reverse B_t , density ramp from Line Average Density = $3.8e19$ @ 0.5 s to $11e19$ @ 1.6s, $B_t = 1.4T$. Plunge @ 0.65, 1.52
2. Repeat # 1 with $I_p=330$ kA $B_t=1.4T$, same density ramp, same timing for plunges
3. Repeat # 1 with $I_p=180$ kA, $B_t=1.4T$, same density ramp, same timing for plunges
4. Repeat # 1 with $q95=2.44$ as # 2, adjust B_t consequently ($B_t = 1.02T$)
5. Repeat # 3 with $q95=2.44$ as # 2, adjust B_t consequently ($B_t=0.8T$)
6. Shape and current from # 1. Stop puffing once the divertor is formed to get low collisionality case. ECRH ramp from 0.9s (150 kW–500 kW)
7. Repeat # 6 with intermediate density value between # 6 and #1 density at 0.65s.
8. Repeat density ramp of Shot # 2 in DN configuration
9. Repeat density ramp of Shot # 3 in DN configuration
10. Repeat # 1 in forward field
11. Repeat # 3 in forward field

Current scan at constant B_ϕ



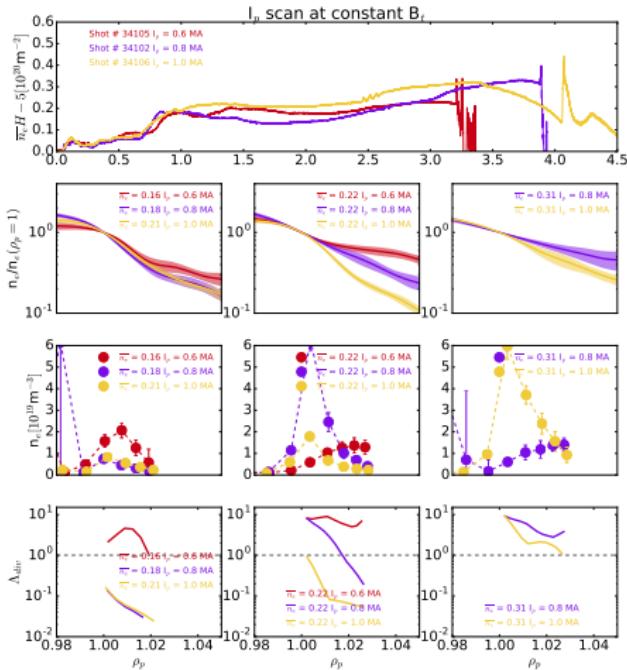
- ✓ Confirming results from Topic-25 increasing the current reduces the ion flux rollover density threshold
- ✓ Neutral compression seems slightly reduced at higher current
- ✓ Ohmic power different but power radiated from the LFS divertor seems similar among the shots
- ✓ Comparable H_α emission from target

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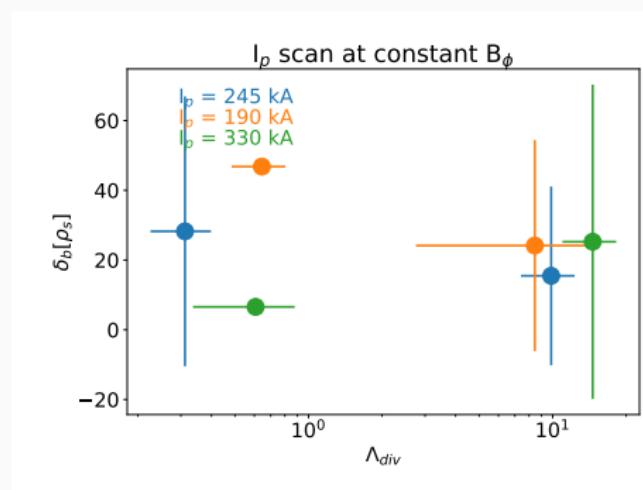
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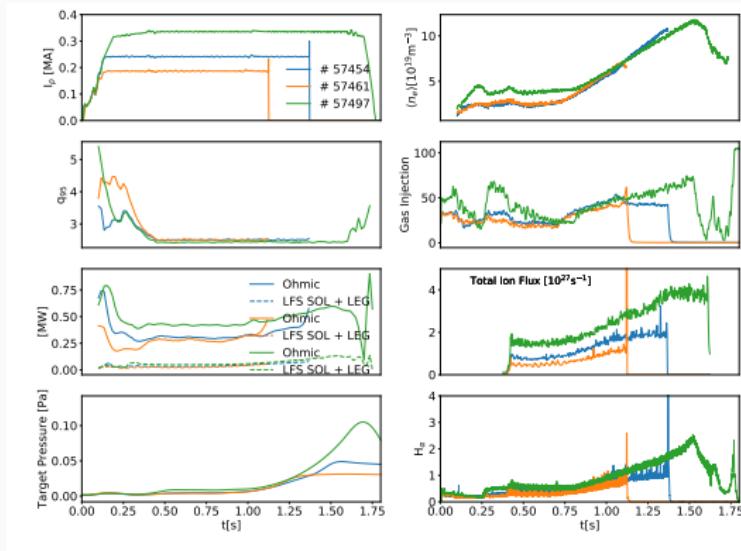
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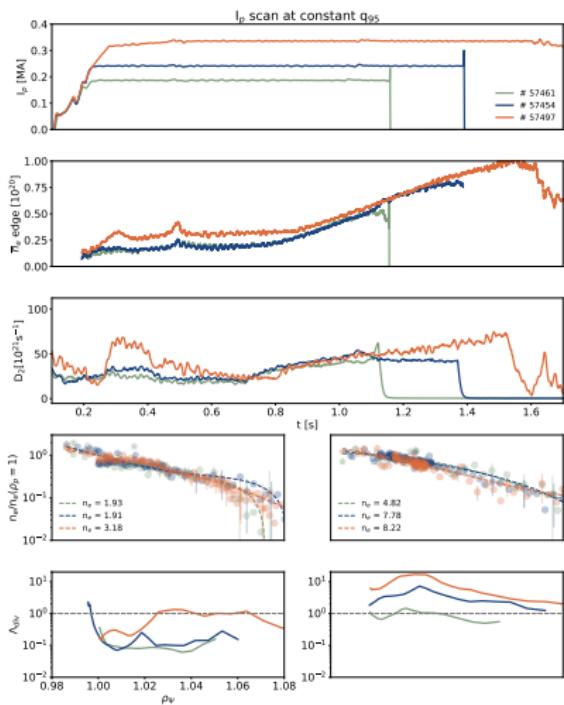
Current scan at constant q_{95}



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- ✓ Expected higher target neutral pressure increase at higher current



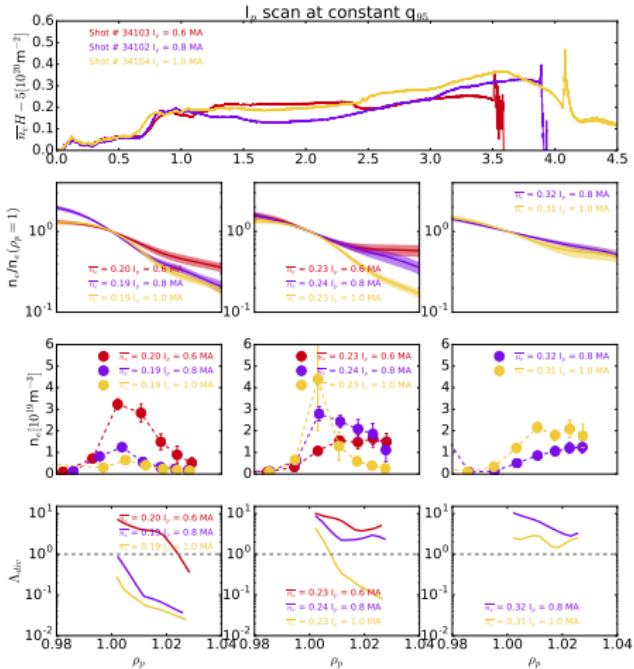
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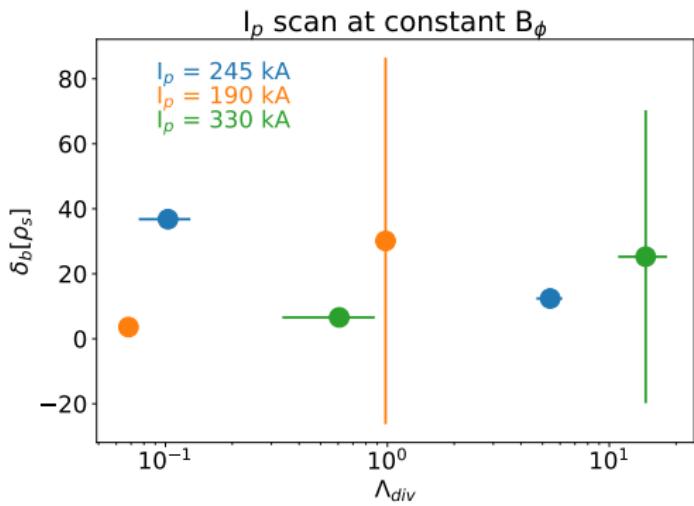


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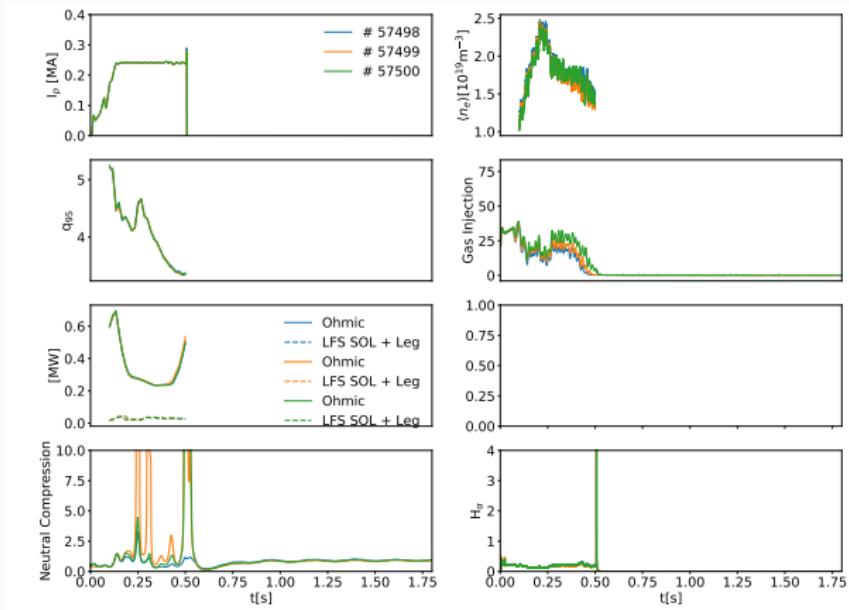
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- ✓ In AUG the things are different and even with the same q_{95} flattening is easier at lower current

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Attempt for low collisionality



All the attempt to perform a low collisionality case disrupted whenever density decreases below a certain threshold

To be done



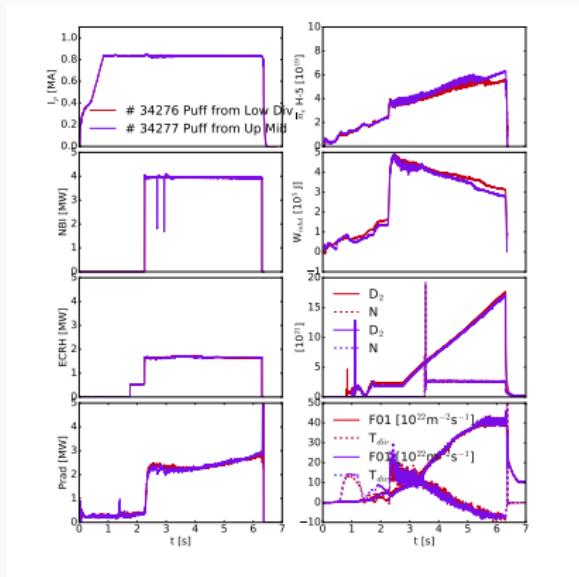
1. Evaluation of parallel flow profile (in progress)
2. Further statistical analysis on RCP
3. We could repeat a couple of shots with wall mounted probe in J_{sat} for statistics at the wall to be compared with AUG
4. Radiation front movement from Bolometry
5. DSS analysis.
6. Multicam analysis. We need a reference person to ask to

To be done in L-Mode



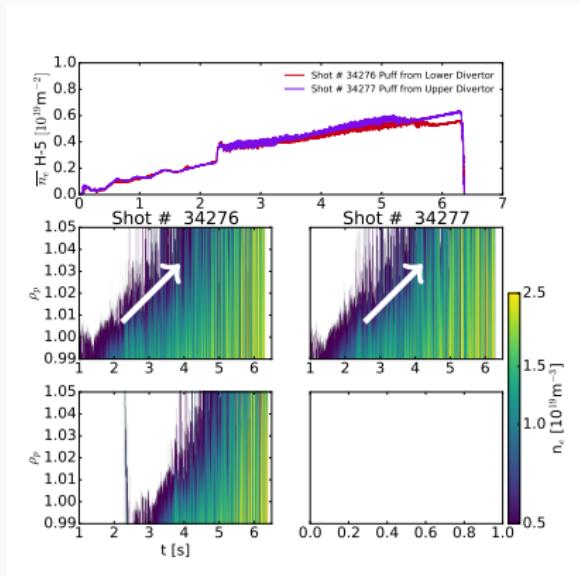
1. Low collisionality case useful for baseline scenario with no shoulder at all
2. A point at higher current at constant B_ϕ (I don't think we have still room for reducing the field further)
3. Repeat density ramp of Shot # 2 in DN configuration at fixed B_ϕ
4. Repeat density ramp of Shot # 3 in DN configuration at fixed B_ϕ
5. 2 Shots for performing a current scan in forward B field

To be done in H-Mode



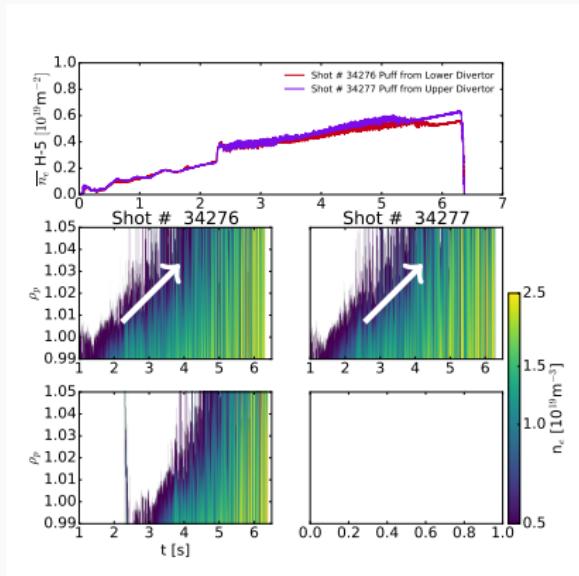
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- ✓ This clearly exhibits a saturation of SOL profile which is our target
- ✓ We will hear from Benoit and Christian which are the reliable scenarios which can actually been obtained so far on TCV