Topic 21: AUG experiment KoM

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AUG experimental plan

The present experimental plan addressed some of the proposed experimental plan for both the L-Mode and H-Mode part.

AUG experimental plan

We will conclude the L-Mode part in Week 15 where we also would like to include part of the H-Mode scenario development

Week 15

1. Take Shot # 30269 as Reference, Reduce current to 0.6 MA keeping the same toroidal field B_ϕ adjust the fueling rate (*Current scan*)
2. Repeat shot #1 keeping the same q_{95} as reference (*Current scan at fixed* q_{95})
3. Repeat #1 at higher current 1 MA adjusting the fueling rate
4. Repeat # 3 keeping the same q_{95} as reference shot

AUG experimental plan

Week 15

For the H-Mode scenario development we start from the best shot found in 2016 (# 33478) and increase the heating power

1. Start from shot # 33478 but with increased heating power (6MW). Adjust fueling rate from reference by increasing by a factor of 30 %. 1 Plunge of probe head at the end of the discharge still in a safe position and IR monitoring
2. Repeat # 1 eventually adjusting the fueling rate. Start the N seeding in feedforward starting fro the level found in reference
3. Trade off between #1 and #2 Fueling/Seeding. Additional plunge of probe at the end of the discharge

AUG experimental plan

Week 17

1. Repeat best H-Mode shot found in Week 15 1st Radial position of probe
2. Repeat #1, different probe position
3. Repeat #1, different probe position
4. Repeat best H-Mode shot found in week 15 and reduce the cryopumps
5. Repeat best H-Mode shot found in week 15 and puff from midplane
6. Contingency
7. Contingency

AUG experimental plan

Among the contingency we propose the following 4 possibilities to be discussed

1. Reversing B_t direction and repeat one identical shot (e.g # 30269) to investigate the role of SOL flows in SOL shoulder formation and filamentary transport
2. DN discharge with similar density ramps as in reference. Possibly the two X-point should sit on the same flux surface
3. Attempt a scenario similar to Topic-06 which will be performed later in time. See for example shot # 29816 (Presented by T. Eich in the GPM) which is at even higher power (8 MW) or # 25740 which is actually in DN. If we choose for this we could actually compare with the priority 3 of L-Mode contingency
4. Reverse B_t operation. In this case the L-H treshold is different and we might end by careful adjusting the power into I-Mode scenario

Required diagnostic and analysis

- ☒ Midplane Manipulator
- ☐ Li-Beam. *Are fluctuations and profiles available simultaneously*
- ☐ RFA #2
- ☐ Divertor probes
- ☒ Neutral profiles
- ☐ Infrared for probe head monitoring. *Are Target infrared measurements available/useful?*
- ☐ GPI
- ☒ Reflectometer. *The operation at 2T can be obtained during the q_{95} scan*
- ☒ Fast probes on the limiter
- ☐ Bolometer/AXUV in the divertor region

Work to be accomplished before the experiment

1. Check the shape modification during the current/q_{95} scan
2. Probe conditioning?
3. Check the status of the diagnostics including GPI (issue regarding the puffing)
4. Code preparation for analysis and visualization. *GITHUB repository?*
5. Other?