

TH/P1-30: MHD stability of ITER H-mode confinement

with pedestal bootstrap current and diamagnetic effects taken into account

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We find that

1. The inclusion of bootstrap current for equilibrium is critical for ITER MHD stability study.
2. Rotation can give rise to a stabilizing effect on RWMs.
3. The diamagnetic drift effects can significantly reduce the RWM growthrate, but cannot fully eliminate the unstable RWMs. Only with the rotation effects included as well, the diamagnetic drift effects can further extend the stability regime.
4. The pedestal current (J_{ped}) and pressure gradient (P'_{ped}) alone is insufficient to draw an universal stability diagram. The safety factor value at the pedestal top, or the core plasma current, can also significantly affect the MHD stability conditions.

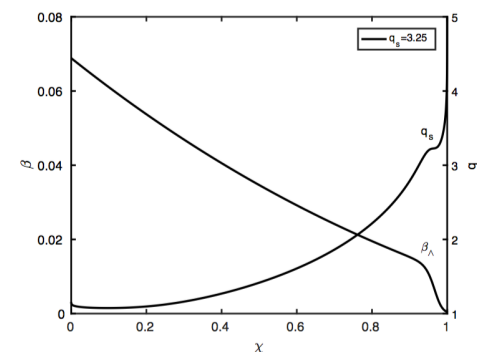


FIG. 2: Pressure (β) and q profiles.

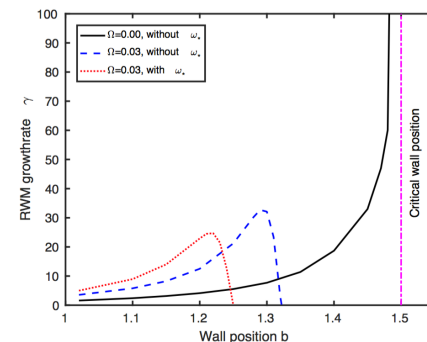


FIG. 10: The RWM growthrate vs the wall position with and without rotation for counter current rotation. The diamagnetic drift effects are included for dotted curve.