

EC power management in ITER, from the commissioning phase to demonstration discharges

- Control schemes foreseen for NTM control on ITER are primarily based on experience from present-day tokamaks.
- Recent time-dependent simulations with TRANSP, which evolve NTMs and plasma under effect of EC feedback control indicate a need for reviewing these schemes:
 - EC power, up to 10 MW, should be reserved for NTM control
 - Pre-emptive control is more effective than active control
 - Combined EC applications (core heating and MHD) might not be possible, since limited by the fast time-scales of NTMs
 - Uncertainties in the real-time equilibrium reconstruction of as little as 1cm can hinder the ability to stabilize the (2,1) mode
 - Simultaneous control of sawteeth and NTMs with the upper launcher might not be possible because of low efficiency of the launcher for sawtooth trigger.