PLASMA RESPONSE EFFECTS

*Screening response: reduced radial extent of perturbed scrape-off layer.
*Plasma response (MARS-F) in resistive single fluid MHD in full toroidal geometry: field amplification near separatrix competes with screening of resonances → large magnetic footprint on divertor targets.
*"Low" rotation is expected for ITER, but sensitivity at low-moderate rotation requires further investigation.

DETACHMENT TRANSITION

*Earlier onset of detachment (i.e. at lower upstream density) in original strike zone (SP1) compared to unperturbed reference.
*Non-axisymmetric strike point in far SOL (SP2) remains attached, even at higher upstream densities.

CONCLUSIONS

* A good understanding of the plasma response is key for reliable predictions of divertor loads.
* Rerouting upstream heat flux along perturbed field lines into the far SOL brings high temperatures to strike points which remain attached to higher upstream densities.
* Field amplification near the separatrix may result in magnetic footprints that exceed the vertical target onto the rounded baffle where tolerances are much lower.
* Dissipation from impurity seeding is less effective with large magnetic footprints.