

Localized current perturbations by ECCD on Tore Supra

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Extensive long pulse experiments have been performed on the Tore Supra tokamak, using both Ion Cyclotron (3 MW) and Lower Hybrid (3 MW) waves to heat the plasma and sustain non-inductive current. Despite a lower available power level (500 kW), EC waves have been employed in recent discharges to perturb the current profile locally. Experimental observations have shown that these perturbations have an impact on plasma confinement, MHD modes dynamics, and the behavior of the non-linear oscillations that often appear in non-inductive plasmas on Tore Supra[1]. In particular, depending on the injection angles, ECCD can either trigger or stop the oscillations, inducing a distinct change in the energy confinement characteristics of the discharge. We present here recent experimental observations related to the influence of EC waves in these experiments, as well as the current state of their integrated modeling. Prospects in terms of active control of the current profile with ECCD in Tore Supra will also be addressed.

References

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