

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Overview of Recent Results and Future Plans of RFX-MOD

MARIA ESTER PUIATTI, LORIS APOLLONI, PIERO MARTIN, CONSORZIO RFX-Associazione Euratom-ENEA sulla Fusione, RFX-MOD TEAM — RFX-mod is a flexible RFP (R=2m, a=0.46m) device designed for operation up to 2MA, to (a) explore RFP approach to fusion (b) provide state-of-the-art contribution to stability feedback control (c) focus on 3D magnetic shaping. Operation up to 1.9 MA was achieved. Single helical axis equilibria with strong electron internal transport barriers [Nat. Phys. 5, 2009] lead to $T_{e,core} \approx 1.5$ keV. eITBs develop in regions with low/null magnetic shear and appear at $n/n_{Greenwald} 0.2$; this operational limit is due to n_{edge} accumulation. A combination of H-pellet fuelling and lithization is explored to reach better density control and more peaked n_e profiles. Gyrokinetic calculations show that microtearings may drive transport across eITB. Full 3D equilibrium is reconstructed with VMEC, adapted to the RFP and allowing the application of other codes originally developed for stellarators. MHD feedback control gives new results, also in low-current RFX-tokamak plasmas, where a (2,1) current driven is actively stabilized, reinforcing the collaboration with tokamak community on MHD active control.

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Date submitted: 22 Jul 2010

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