

Abstract Submitted
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Overview of Recent DIII-D Experimental Results¹ MAX FENSTERMACHER, Lawrence Livermore Natl Lab, DIII-D TEAM — Recent DIII-D experiments contributed to the ITER physics basis and to physics understanding for future devices. RMP ELM suppression and density pump-out thresholds are matched by non-linear two-fluid TM-1 MHD modeling. Deuterium pellet fueling particle source maintains higher pedestal pressure than gas through Te profile changes. Stabilizing effect on 2/1 NTM islands seen from deep high field side pellet fueling. Changes in ideal and resistive stability well below the high-pressure external kink limit impact limits for disruption induced MHD. Local non-linear gyrokinetic simulations match inferred increased diffusion of impurity species correlated with transition from ITG to mixed ITG/TEM modes. Heat pulse propagation data and simulations show connection between millimeter-scale turbulence and deposition profile broadening of electron cyclotron waves. H-mode injection of isotopically enriched B correlated with reduced wall fueling and impurity concentrations similar to boronization. Observed and simulated tungsten erosion and deposition patterns suggest ExB transport effects dominate over parallel force balance effects.

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