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Overview of the DIII-D Experimental Program[1] S.L. ALLEN, DIII-D Team, DIII-D National Fusion Facility — The DIII-D research program has made significant progress toward developing the scientific basis for optimization of the tokamak. An understanding of error field amplification as the mechanism for the loss of rotation in high-β plasmas has led to stabilization of the resistive wall mode by plasma rotation and achievement of β_N approximately twice the no-wall limit. The efficiency of off-axis electron cyclotron current drive (ECCD), which at low β suffers a reduction due to trapping effects, increases with increasing β_e and recovers near axial values at $\beta_e = 2\%$, as predicted by theory. Neoclassical tearing modes (NTM) were stabilized by feedback-localized ECCD, β was increased 20% above the NTM-onset value. The measured radial correlation length of microturbulence scales with the toroidal gyroradius and not with the poloidal gyroradius, consistent with gyrokinetic modeling. Pedestal nondimensional similarity was demonstrated between DIII-D and C-Mod. "Bursty" transport was observed in the scrape-off layer. Noble gas injection has proven an effective disruption mitigation technique, without producing runaway electrons. These and other highlights from the 2001 campaign will be presented.

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[X] Prefer Oral Session
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