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Electron Cyclotron Heating and Current Drive Experiments in the DIII-D Tokamak¹ T.C. LUCE, J.S. DEGRASSIE, C.C. PETTY, R. PRATER, J.M. LOHR, R.I. PINSKER, General Atomics, M.E. AUSTIN, University of Texas, Austin, S. BERNABEI, Princeton Plasma Physics Laboratory — The system for electron cyclotron heating (ECH) and current drive (ECCD) in the DIII-D tokamak consists of two gyrotrons at 110 GHz capable of delivering together in excess of 1 MW for up to 2 s. The launcher is designed to produce a pair of narrow beams which can be steered in the poloidal plane. This allows the deposition location to be varied from the center to the edge without altering the basic discharge parameters. The second harmonic EC resonance strongly damps the waves, resulting in highly localized deposition. An upper bound on the deposition profile width can be experimentally determined by means of modulation techniques. The deposited power is also cross-checked to fiducial heating pulses with the fast wave direct electron heating. The results of radial scans for off-axis ECH and ECCD will be presented.

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