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Category Number and Subject: 5.6.2. DIII-D Tokamak

Theory Experiment Combined/General

Off-Axis neutral beam current drive on DIII-D,* C.C. Petty, J.R. Ferron, P.A. Politzer, R. Prater, M.A. Van Zeeland, *General Atomics*; J.M. Park, M. Murakami, *ORNL*; W.W. Heidbrink, C.M. Muscatello, *UCI*; C.T. Holcomb, *LLNL*; B.A. Grierson, *PPPL* – Experiments on the DIII-D tokamak have studied neutral beam current drive (NBCD) during off-axis deposition in greater detail than previously possible. Full radial profiles of the beam ion density and driven current density have been obtained for beams steered 16.5 deg downwards. Novel experiments compare the NBCD profile for on-axis and off-axis injection by modulating between these choices at 5 Hz. The sinusoidal response of the motional Stark effect (MSE) signals can be either compared to numerical simulations or utilized to directly determine the NBCD profile. More standard studies compare the change in the non-inductive current profile, determined from the poloidal flux evolution, for steady (unmodulated) on-axis and off-axis beam injection. The NBCD profiles are crosschecked with the beam ion density profiles measured by Fast Ion D-alpha (FIDA) spectroscopy. The effect of transport from microturbulence on the NBCD profile is also investigated.

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