Abstract Submitted
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Effects of plasma rotation in reconstructed 3-D equilibria for DIII-D[1] A. WINGEN, M.W. SHAFER, E.A. UNTERBERG, R.S. WILCOX, M.R. CIANCIOSA, S.P. HIRSHMAN, D.L. HILLIS, ORNL, L. LAO, C. PAZ-SOLDAN, GA — A technique for tokamak equilibrium reconstructions when weakly 3-D fields (δB/B $\sim 10^{-3}$) are applied is used for inner-wall-limited DIII-D discharges. The technique couples diagnostics to the non-linear, ideal MHD equilibrium solver VMEC, using the V3FIT code, to find the most likely 3-D equilibrium based on a suite of measurements. Observations at DIII-D show that plasma rotation larger than 20 krad/s changes the relative phase between the applied 3-D fields and the measured plasma response. Numerical simulations of linear, resistive, 2-fluid MHD show, that large plasma rotation increases flux surface corrugations1. Discharges with low averaged ($\sim$10 krad/s) and peaked rotation profiles ($\sim$40 krad/s) are reconstructed. Similarities and differences to forward modeled VMEC equilibria, which do not include rotational effects, are shown. The resulting significance of including rotational effects in VMEC is discussed.

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