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Plasma Equilibrium Response to Slowly Rotating 3D Magnetic Perturbations in DIII-D RMP Experiments[1] L.L. LAO, M.S. CHU, A.D. TURNBULL, M.R. WADE, General Atomics, N.W. FERRARO, ORISE, V.A. IZZO, UCSD, E.A. LAZARUS, ORNL, W. GUO, Q. REN, ASIPP, R. SRINIVASAN, IPR, Y.Q. LIU, UKAEA — Slowly rotating non-axisymmetric magnetic perturbations have been routinely used in DIII-D experiments to study the plasma response to the applied perturbation fields. The slow changes in the perturbation amplitude allow the use of the DIII-D edge Thomson scattering measurements of electron temperature as an indicator to monitor the edge magnetic surface response in H-mode discharges. Although the applied perturbation fields are small, the edge magnetic surface responses can be large. For perturbations with $n = 1$, a perturbation of 0.1%-0.3% of the poloidal equilibrium magnetic field can result in a 2%-4% change in the edge magnetic surface topology. The effects of the 3D perturbation fields on the equilibria with and without plasma response are being modeled using the 3D linear MHD code MARS-F, the 3D equlibrium codes VMEC and VMOM3D, and other MHD codes. Initial results indicate that plasma responses are important. Results will be presented.

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