Abstract Submitted
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Applications of 3D Equilibrium Reconstruction[1] SAMUEL LAZERSON, Princeton Plasma Physics Laboratory, JOACHIM GEIGER, Max-Planck Institut fur Plasmaphysik, YURI GRIBOV, ITER Organization, STUART HUDSON, DAVID GATES, Princeton Plasma Physics Laboratory — The STELLOPT 3D equilibrium reconstruction code has utilized to model the W7-X diagnostic response to bootstrap current profile variation, the ITER diagnostic response to +/- 2 cm boundary variations, and full 3D equilibrium reconstructions for the DIII-D plasma with applied RMP fields. Field line tracing codes indicate a +/- 5 cm ability to shift divertor strike points providing limited capabilities to control divertor heat loads in W7-X. Parameter space maps of bootstrap current variation suggest a diagnostic set capable of predicting bootstrap current evolution and providing feedback control of the plasma. Modeling of the ITER 15MA scenario suggests such coils will perturb the plasma edge up to +/- 2 cm, with significant effects on magnetic diagnostic response. Full 3D reconstructions of the DIII-D plasma with applied RMP's have been carried out with STELLOPT. Forward modeling of the equilibrium using the Stepped Pressure Equilibrium Code (SPEC) suggests the presence of islands and corroborates the notion of mode penetration in this shot.

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