Abstract Submitted
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Parametric Equilibrium Reconstructions for Wendelstein 7-X with V3FIT[1] J.C. SCHMITT, D. MAURER, Auburn University, S. LAZERSON, N. PABLANT, Princeton Plasma Physics Laboratory, T. ANDREEVA, J. GEIGER, U. NEUNER, K. RAHBARNIA, J. SCHILLING, Max-Planck-Institut fr Plasmaphysik, W7-X TEAM — Plasma equilibrium reconstruction is important for interpreting diagnostic signals and understanding the plasma performance for toroidal fusion experiments. The process is iterative and involves solving the MHD equilibrium, computing synthetic diagnostic signals based on that equilibrium, and comparing these signals to measured ones. Parameters that describe the equilibrium are adjusted between iterations to find a best fit of the measured and synthetic signals. The shape of the plasma, the location of the plasma edge, and profile information regarding the plasma pressure, current, and individual plasma species (e.g. Te, Ne, Ti, Ni) are the output of the reconstruction. These profiles are used to interpret diagnostic information and for further physics analysis. The constraints for the reconstructions of plasmas at Wendelstein 7-X (W7-X), which include diagnostics and conditions on the plasma last closed flux surface, and the importance of the coil model are discussed. Equilibrium reconstructions for various magnetic configurations and the extension of the equilibrium model beyond the last closed flux surface are also shown. Future plans for the application of V3FIT reconstructions to W7-X plasmas are discussed.

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