Abstract Submitted
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Magnetic Analysis of LTX plasmas[1] J.C. SCHMITT, R. MAJESKI, R. KAITA, L. BERZAK HOPKINS, T. KOZUB, J. SQUIRE, L. ZAKHAROV, Princeton Plasma Physics Laboratory — The Lithium Tokamak Experiment (LTX) is a spherical tokamak with a close fitting low-recycling wall. The wall is conditioned prior to plasma operations by evaporating lithium onto stainless steel-lined copper shells. The 3/8" copper shells are conformal to the last closed flux surface, cover about ∼85% of the surface area, and have two poloidal and two toroidal breaks. The copper shells have high electrical conductivity, so changes in the coil and plasma currents induce long-lived eddy currents with large spatial extent in the close fitting wall [1]. Digital signal processing techniques [2] will be applied to remove the effects of the coil-induced eddy currents. Lowest order calculations of the current centroid position, column width, beta and internal inductance will be presented. In the presence of the 3D shell eddy currents, a reliable 2D axisymmetric reconstruction is challenging. Poloidal field coil program simulations, including the effects of the 3D eddy currents, are started. Predictions of the simulations, experimental results and reconstructions of LTX plasmas will be compared.

[1] L. Berzak Hopkins, et al., Nuclear Fusion 52 (2012) 063025.
[2] Laqua and Schneider, Fusion Engineering and Design 48 (2000), 143.

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