

Abstract Submitted
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Effects of Liquid Lithium Plasma Facing Components in the Lithium Tokamak eXperiment¹ LAURA BERZAK, Princeton University, ROBERT KAITA, RICHARD MAJESKI, LEONID ZAKHAROV, Princeton Plasma Physics Laboratory — The LTX (Lithium Tokamak eXperiment) will investigate magnetically confined plasmas with liquid lithium walls, the first experiment of its kind. This unique first wall condition is expected to dramatically enhance confinement, stability, and discharge control, and virtually eliminate recycling. The LTX is currently under construction, with first plasma scheduled in late 2007. An extensive array of diagnostics will be available, including flux loops, Rogowskii coils, Mirnov coils, Thomson scattering, interferometry, and deposition monitors. This research project will focus on reconstructions of the LTX equilibrium, using magnetics measurements to constrain plasma modeling in the Equilibrium and Stability Code (ESC). This is the first code capable of equilibrium reconstructions using magnetic signals dominated by eddy current contributions from the surrounding walls. Of particular significance will be changes in the current profile as recycling is lowered, and its effect on the confinement time's dependence on plasma current, toroidal field, density, and temperature. In addition, this research will further knowledge of liquid metal walls for chamber technology in both inertial and magnetic fusion.

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