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Diagnostics for Experiments with Liquid Lithium Plasma-Facing Components in LTX[1] T. STRICKLER, R. KAITA, R. MAJESKI, PPPL, R. MAINGI, ORNL, V. SOUKHANOVSKII, LLNL — The goal of the Lithium Tokamak eXperiment (LTX) spherical tokamak is to investigate plasmas that are almost completely surrounded by a liquid lithium wall. Such a configuration is expected to be fully non-recycling, resulting in a novel, highly-stable tokamak plasma regime. Profound changes in the temperature and density profiles are predicted, making diagnostics to measure them particularly important. Thomson scattering is an established technique for obtaining such data, and a system is being implemented with multiple spatial views across the LTX midplane. Low recycling walls will also have a dramatic effect on the plasma fueling and particle confinement. This is reflected in the time evolution of the plasma density, which will be measured using a microwave interferometer initially configured with two channels. The absence of recycling will be manifest in the virtual elimination of edge emission, and this is to be confirmed with an array of filtered detectors, or filterscopes. The stability of LTX discharges will be studied with instruments that include multichord X-ray arrays for the core plasma, and external magnetic pickup coils for instabilities that couple to the edge. This presentation will discuss the present and planned diagnostic capabilities of LTX.

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