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Langmuir probe measurements on the Lithium Tokamak eXperiment (LTX)[1] ALBERT RYOU, University of Pennsylvania, MICHAEL JAWORSKI, RICHARD MAJESKI, PPPL — LTX aims to enhance plasma energy confinement time by coating the plasma-facing surfaces of the tokamak with liquid lithium, which reduces the recycling of hot plasma particles into cold gas at the edge of the tokamak. A diagnostic single-tip Langmuir probe, along with the electronic circuit for signal analysis, was designed and constructed to determine the IV characteristic, from which the edge parameters, namely, the electron density, temperature, and the saturation currents will be calculated. A 1 mm diameter cylindrical tungsten electrode with two independent coaxial ground shields of stainless steel, separated by alumina tubing, will be inserted into the LTX plasma. A bellows-sealed linear motion feedthrough, mounted at the outer midplane of the device, is used to position the probe. The probe tip will be inserted into the scrape-off layer plasma beyond the last closed flux surface. A model based on the conventional Langmuir probe theory was developed to find the parameters, and the results will be compared to those determined from other diagnostic techniques such as Thomson scattering.

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