

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Characterization of the Scrape-off Layer of Lithium Tokamak eXperiment- $\beta$  (LTX- $\beta$ ) using a Retarding Field Energy Analyzer**<sup>1</sup> XIN ZHANG, Princeton Plasma Physics Laboratory, DREW ELLIOT, Oak Ridge National Laboratory, DENNIS BOYLE, RICHARD MAJESKI, Princeton Plasma Physics Laboratory — The Lithium Tokamak eXperiment (LTX) is a spherical tokamak device designed to study lithium plasma facing components (PFCs). The lithium coated wall of LTX has been demonstrated to produce a low density, high temperature, and hence low collisionality plasma edge. The recent upgrade to LTX- $\beta$  includes installation of a neutral beam, which will provide further heating and fueling of the plasma. Core and edge diagnostics will also be expanded. As part of this expansion, a Retarding Field Analyzer (RFEA) has been developed for the scrape-off layer (SOL) of LTX- $\beta$ . Measurements of the ion temperature, ion energy distribution, and the local space potential will be performed in the SOL plasma using this RFEA. Since a high temperature, low collisional edge is expected for LTX- $\beta$ , the plasma in the SOL will be mirror-trapped, and could produce an ambipolar potential via differential loss of the electrons and ions, known as the Pastukhov potential in the literature [1]. A simple numerical prediction of the ambipolar potential profile will be presented, along with the design of the RFEA system. <sup>1</sup> Pastukhov, V. P., Nucl. Fusion **14.1** (1974).

<sup>1</sup>Work supported by US DOE contracts DE-AC02-09CH11466 and DE-AC05-00OR22725.

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Date submitted: 14 Jul 2017

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