

Abstract Submitted  
for the DPP13 Meeting of  
The American Physical Society

**Characterization of a Liquid Lithium Pellet Delivery (LLPD) System for ELM Pacing and Lithium Replenishment in NSTX-U**<sup>1</sup> DANIEL ANDRUCZYK<sup>2</sup>, University of Illinois Urbana-Champaign, LANE ROQUEMORE, Princeton Plasma Physics Laboratory, PETER FIFLIS, DAVID RUZIC, University of Illinois Urbana-Champaign — A new liquid lithium pellet delivery system has been developed that will be used in several Li delivery schemes in NSTX-U. The LLPD is based on dripping Li out of a 300  $\mu\text{m}$  diameter nozzle. A modulating current and permanent magnets provide a  $\mathbf{J} \times \mathbf{B}$  force that drives the formation of the droplets. It is suggested that the current amplitude sets the size of the drops and the modulation sets the frequency that the drops come out of the nozzle. An alternative method for drop production uses high pressure gas where the pressure sets the frequency, up to 2 kHz, and drop size,  $0.6 < d_{drop} < 2.0$  mm. It's intended to use LLPD to deliver solid Li pellets for the granular injector system, fill the upward facing LITER (U-LITER) being developed and maintain fresh Li during a discharge by injecting Li drops into the plasma, ablating the Li and replenishing the coatings on the PFCs.

<sup>1</sup>Work supported by DOE Contract No. DE-AC02-09CH11466.

<sup>2</sup>Stationed at Princeton Plasma Physics Laboratory for UIUC.

Daniel Andruczyk  
University of Illinois Urbana-Champaign

Date submitted: 12 Jul 2013

Electronic form version 1.4