

Abstract Submitted  
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**E-beam-based Lithium Flash Evaporator for NSTX-U** A.L. ROQUEMORE, C.W. SKINNER, D. ANDRUCZYK<sup>1</sup>, D. MANSFIELD, R. MAJESKI, Princeton Plasma Physics Laboratory — A commercial e-beam evaporator is being utilized as the main component of a lithium (Li) flash evaporator that will coat the upper divertor of NSTX-U. The evaporator system (U-Liter) will be mounted on a horizontal probe drive and will be inserted into NSTX-U in an upper port of one of the midplane port covers. In the retracted position the evaporator will be loaded with  $\sim 300$  mg of Li granules utilizing one of the well-calibrated NSTX Li granular droppers. The evaporator will then be inserted into the vessel and parked in a location well within the shadow of the RF limiters where it can remain in the vessel during the discharge. Resident Helmholtz coils will position the beam into a tungsten crucible, where the total Li inventory will be rapidly heated and completely evaporated in a matter of seconds shortly before a discharge. The need for shutters to prevent Li vapor from coating diagnostic windows is eliminated with this approach. The minimal time between the evaporation and the start of the discharge will avoid the passivation of the lithium by residual gases. The evaporator can easily be withdrawn, reloaded with Li granules, and reinserted during the inter-shot interval.

<sup>1</sup>On long term collaboration with U. Illinois

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