

Abstract Submitted
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Convective Stirring in Liquid Lithium (LTX)¹ MARGARET CASSIN, Bucknell University, EUGENE KEARNS, RICHARD MAJESKI, PPPL — LTX is a spherical tokamak with $R=0.4$ m, $a=0.26$ m, and elongation=1.5. LTX has a heated (300 – 400 C) liner, designed to be coated with lithium. During experiments in 2010, oxidation of the lithium surface was observed when the liner was heated to 300 C, above the melting point of lithium (182 C). A pumping system is being installed to absorb and pump background gasses which react with lithium, similar to a getter pump, using liquid and solid lithium. Lithium will be loaded into a yttria crucible heated from below by a small, HeatWave model TB175 300W cartridge heater to produce convective currents in order to maintain a clean lithium surface and decrease the time for oxide formation. This system was tested in an argon glove box using a copper heat concentrator – instead of the HeatWave vacuum-compatible unit. Infrared thermometry and thermocouples were used to monitor the surface temperature of the molten lithium, and convective flow patterns. A 200 FPS high speed camera was also employed to monitor flows, using the motion of residual oxide patches. Results from the measurements will be presented.

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