

Abstract Submitted
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Three Potential LiWall regimes in the Lithium Tokamak eXperiment (LTX)¹ JONGSOO YOO, LEONID ZAKHAROV, Princeton University, PPPL — The incoming Lithium Tokamak eXperiment (LTX) is designed for a low recycling operation with the plasma inside a close fitting shell coated with a pumping layer of lithium. This creates a special situation for confinement when the thermo-conduction is suppressed due to elevated edge temperature and the energy confinement is determined by the particle diffusion. The so-called Reference Transport Model (RTM) in which the diffusion coefficient as well as the ion/electron thermo-conduction coefficients are equal to the ion neoclassical thermo-conductivity, seems to be relevant for the low recycling regime. The RTM has been implemented in the ASTRA-ESC code system of transport analysis for simulation of the LTX stationary plasma regimes. Three zero recycling reference regimes have been identified earlier for LTX. In the Ohmic regime with the gas puff the central electron temperature is expected to be at the level of 1 keV and $T_i \simeq 0.15$ keV. The combination of Ohmic-NBI (10 keV neutral beam injection) heating can elevate the ion temperature to $\simeq 0.6$ keV. With an enhanced NBI current, the third, hot-ion regime can be achieved with plasma fueling by NBI and $T_i > T_e$. The focus of the present studies is on the effects of residual finite recycling.

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