Abstract Submitted
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Design and construction of a lithium vapor box divertor similarity experiment[1] J. A. SCHWARTZ, Princeton Plasma Physics Laboratory, R. A. COHEN, Princeton University, E. D. EMDEE, M. A. JAWORSKI, R. J. GOLDSTON, Princeton Plasma Physics Laboratory — Future fusion devices will require handling extreme heat fluxes. The lithium vapor box divertor is a concept to manage this heat flux. The divertor plasma impinges on a dense cloud of lithium vapor, leading to volumetric cooling, radiation, and recombination. The vapor is localized by baffles and condensation on the divertor slot walls upstream of the target, limiting the lithium reaching the main chamber. A series of test stand experiments will study vapor confinement and plasma plugging in a simplified baffled-pipe geometry. A first experiment without plasma will validate a DSMC model for evaporation, flow, and condensation of lithium vapor. Three stainless steel cylindrical cans will be heated to 550C, 600C, and 650C respectively inside a vacuum chamber. Lithium flow will be measured by weighing the cans before and after heating and by calorimetry of the latent heat of the vapor. Progress on the experiment will be presented.

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