

Abstract Submitted
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Recent results on ELM-like plasma-surface interactions produced by a conical theta-pinch TRAVIS GRAY, MICHAEL WILLIAMS, DAVID RUZIC, University of Illinois at Urbana-Champaign, ISAK KONKASH-BAEV, Argonne National Laboratory, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN TEAM, ARGONNE NATIONAL LABORATORY TEAM — The Divertor Erosion and Vapor shielding eXperiment (DEVeX) at the University of Illinois at Urbana-Champaign is designed to produce plasmas with densities on the order of 10^{21} m^{-3} with a total plasma temperature of several hundred eV. This is accomplished with the rapid discharge of a 64 kJ capacitor bank through a conical shaped θ -pinch coil. The general purpose of the facility is to generate energetic plasma flows to study plasma-material interaction relevant to disruption conditions in TOKAMAKs. However, the facility has been designed with great flexibility to be able to study high power, pulsed electric propulsion; FRC formation and translation; and relevant astro-physical plasma jets. Here, the first measurements of the plasma flow and translation from the θ -pinch are presented. A theoretical model is also shown to predict how these energetic plasma flows will interact with solid materials. This work is important to understanding the ultimate plasma facing component (PFC) lifetime and viability. It also provides an opportunity to measure plasma/vapor cloud formation and interaction with an incident flowing plasma.

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