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**Dynamic measurements of the structure of a vapor cloud formed during high powered fusion relevant disruptions** TRAVIS GRAY, MICHAEL JAWORSKI, VIJAY SURLA, DAVID RUZIC, University of Illinois, Urbana-Champaign, CENTER FOR PLASMA MATERIAL INTERACTIONS 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 ($T_i$ + $T_e$) of several hundred eV. This is accomplished with the rapid discharge of a 64 kJ capacitor bank through a conical shaped $\theta$-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. Here, the first measurements of the plasma flow and the resultant vapor cloud produced during the plasma strike are presented. Lithium is used as the plasma facing material due to its low melting temperature and high vapor pressure as well as for its resurgent use in the fusion community. Measurements of the vapor cloud dynamics are accomplished with an array of fiber optics extending perpendicularly away from the lithium target. Vapor cloud density is measured by resonance absorption of the 670 nm lithium line. This work is important to plasma facing component (PFC) lifetime and viability as the presence of a vapor cloud can absorb the incident energy of a disruption.

Travis Gray
University of Illinois, Urbana-Champaign

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