

Abstract Submitted
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Effect of Doubly-excited States on Simulation of K- and L-shell Kr Gas Puff on ZR ARATI DASGUPTA, WARD THORNHILL, JOHN GIULIANI, NICK OUART, Naval Research Laboratory, ROBERT CLARK, Berkeley Research Associates, BRENT JONES, DAVE AMPLEFORD, ADAM HARVEY-THOMPSON, STEPHANIE HANSEN, CHRISTINE COVERDALE, Sandia National Laboratories — A number of recent shots employing multi-shell gas puffs of Ar and Kr on the Sandia National Laboratories ZR accelerator have demonstrated unprecedented K-shell yields. The KAP TIXTL spectra of Ar gas puff shots with a Kr dopant in the middle shell show Kr L-shell lines near 2 keV. There have been also pure Kr shots on ZR. Krypton spectra from Z pinch implosions provide a wealth of information about the pinch dynamics and ionization history of the plasma. These spectra can be used together with experimental spectroscopic data to analyze the presence and dynamics of the emitting regions, which could dominate the Kr K- and L-shell yields. We will present synthetic K- and L-shell spectra with a detailed radiation transport scheme from the emission regions determined from Kr 1D simulations, employing a non-LTE collisional-radiative ionization kinetics model. We will also investigate the effects of state-specific dielectronic recombination on the populations and spectra of Z pinch Kr plasma. *Work supported by DOE/NNSA. Sandia National laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation for the US Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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