

Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Simulation of K- α Emission from Highly Charged Cu ions for Pinches on ZR¹ A. DASGUPTA, J.L. GIULIANI, Naval Research Laboratory, Washington, DC, R.W. CLARK, Berkeley Scholars Inc., Springfield, VA, N.D. OUART, NRC/NRL Post Doc, B. JONES, D.J. AMPLEFORD, Sandia National Laboratories, Albuquerque, NM — Recent spectral data of Cu shots Z1975 and Z2122 from Sandia's ZR machine are believed to show strong K- α emissions. As these K- α lines provide good diagnostics, a detailed spectral model will be developed to investigate these line emissions for analyzing the data. In a Z pinch plasma, K- α emission can occur due to e-beams, hot electrons at the tail of a Maxwellian and also pumping from hot photons emitted near the axis. K- α emission that originates from collisional processes involving hot electrons in the final phase of the pinching plasmas are associated with radiationless electron capture, inner-shell electron collisional excitation and ionization. K- α lines from various ionization stages of various materials such as Fe, Cr, Ni, and Mn were also observed in the ZR data. Contributions from ions with strong K- α transitions will be included for this study which is a preliminary attempt to investigate Cu K- α lines due to hot electrons and photons. Photo-pumped K- α emission from an outer shell is spatially distinguishable from that produced by e-beam on axis.

¹Work supported by DOE/NNSA. Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Arati Dasgupta
Naval Research Laboratory, Washington, DC

Date submitted: 03 Jul 2012

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