

Abstract Submitted
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Analysis of Time Gated K-shell Ni Spectra Created by Implosion of DPWA¹ A. STAFFORD, A.S. SAFRONOVA, V.L. KANTSYREV, I.K. SHRESTHA, V.V. SHLYAPTSEVA, University of Nevada, Reno — Spectroscopy is a useful tool for understanding plasma. It can be used to estimate plasma conditions which when paired with time gated spectra helps characterize how plasma evolves. Double planar wire arrays (DPWAs) are a Z-pinch in which two parallel arrays of wires are imploded by passing high current through the wires. Using a load current multiplier (LCM) with the Zebra generator, a current of up to 1.9 MA can be achieved to implode the array. DPWAs composed of 12 AlumeI (96% Ni, 2% Al, 2% Si) wires per plane were imploded while time gated diagnostics including x-ray spectrometers and pinhole cameras were fielded. The time gate spectra collected from these experiments include K-shell Ni radiation that shows an evolving ionization balance with various ionization stages appearing and disappearing throughout the implosion process. Results from these experiments and modeling will be presented highlighting the value of time gate diagnostics to study atomic processes in Z-pinch plasmas.

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