

Abstract Submitted
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Data processing and analysis techniques of time and space resolved ICF capsule argon k-shell x-ray spectra GREG DUNHAM, Ktech Corp., J.E. BAILEY, G.A. ROCHAU, P.N. LAKE, Sandia National Labs, R.C. MANCINI, University Nevada Reno, J.J. MACFARLANE, I.E. GOLOVKIN, Prism Computational Sciences — Spectroscopic measurements of Ar doped deuterium filled capsules driven by z pinch dynamic hohlraum x-rays provide insight into optimization and future potential of this ICF approach. Time- and space-resolved argon emission data were obtained using the suite of TREX instruments from three quasi-orthogonal lines of sight. Time and space resolution are of order 350 ps and 80 microns, respectively. Analysis of the argon spectra yield symmetry, $T_e N_e$, and ρr measurements and these data provide tests of implosion system understanding. Novel techniques to process the raw spectral images have been developed. Difficulties such as image skew due to crystal defects have been overcome to produce argon spectra that is aligned to the plasma core center throughout the argon Lyman- and Helium-like emission range. This processing is challenging because of the large volume of information provided by multiple space resolved time gated spectrometers in each experiment.

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