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Analysis methods for slit-imaged line spectra from argon-doped implosion cores at Z R. MANCINI, University of Nevada, Reno, J. BAILEY, G. ROCHAU, G. DUNHAM, G. CHANDLER, D. SINARS, P. LAKE, K. PETERSON, S. SLUTZ, T. MEHLHORN, Sandia National Laboratories, T. BURRISMOG, University of Nevada, Reno, I. GOLOVKIN, J. MACFARLANE, Prism Computational Sciences — The availability of time-resolved slit-imaged X-ray line spectra from argon-doped deuterium-filled implosion cores driven by z-pinch dynamic-hohlraums at the Z facility, creates an opportunity for developing new spectroscopic diagnostics of the core. The combination of broad-range X-ray line spectra with high-spectral-resolution, and spatial- and time-resolution provides information for unfolding the temperature and density spatial-structure of the core. Analysis methods are discussed based on using spatially-resolved spectral lineouts that correspond to a spatial-integration over core slices. Alternatively, a set of narrow-spectral-band slit-image intensity spatial-profiles can also be used for analysis. Results are illustrated for argon K-shell spectra recorded with framed crystal spectrometers equipped with space-resolving slits that afforded up to 0.3 ns of time- and 50 μm of space-resolution, and covered the Heα to Lyγ lines spectral range with a spectral resolution power of 1000. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the U.S. Dept. of Energy.

Roberto C. Mancini
University of Nevada, Reno

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