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Partially-space-integrated spectra from spectrally-resolved core image data[1] TAISUKE NAGAYAMA, R.C. MANCINI, R. FLORIDO[2], Physics Department, University of Nevada, Reno, R. TOMMASINI, J.A. KOCH, Lawrence Livermore National Laboratory, Livermore, CA, J. DELETTREZ, S. REGAN, V. SMALYUK, Laboratory for Laser Energetics, University of Rochester, NY
— Partially-space-integrated spectra (PSIS) can be extracted from spectrally-resolved core image data recorded in implosion experiments using a gated multi-monochromatic x-ray imager (MMI). To this end, a portion of the core image is selected and spatially-integrated across the array of core images recorded by MMI. The result is a time-resolved spectrum spatially-integrated only over the selected portion of the core image, i.e. a spatially-resolved spectrum. A set of PSIS covering different regions of the core image can thus be used to study the spatial profiles of temperature and density in the core. We illustrate the application of this technique to direct-drive implosions at OMEGA that employed deuterium-filled plastic shells with a tracer amount of argon for spectroscopic diagnostics.

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