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Spectroscopic Studies of the Soft X-Ray Radiation from Gas-Puff Z-Pinches on Cobra[1] T.A. SHELKOVENKO[2], S.A. PIKUZ[3], P.W.L. DE GROUCHY, N. QI[4], L. ATOYAN, B.R. KUSSE, D.A. HAMMER, Cornell University — Gas-puff Z-pinch experiments have been conducted on the 0.8-1.2 MA, 100-240 ns pulse duration COBRA pulsed power generator. Triple nozzle gas-puff loads consisting of Ne, Ar and Kr gases in different combination and pressures with pre-ionization were used in the most recent experiments. Photo-conducting diodes (PCDs) and pinhole cameras with different filters were used to study the X-ray timing, intensity and spatial distribution in different energy bands. Spectrographs with spatial and temporal resolution were used to study the soft x-ray radiation from the gas-puff Z-pinches. One spectrograph with two spherically bent mica crystals was used to study radiation with 200 micron spatial resolution and high spectral resolution. An x-ray streak camera with one spherically bent quartz crystal was used to study the x-ray radiation with up to 10 ps temporal resolution. The x-ray spectra were used to estimate spatial and temporal distributions of plasma parameters and determine the intensity of the line and continuum radiation from the Z-pinches plasma.

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