

Abstract Submitted
for the FWS14 Meeting of
The American Physical Society

Renovated Compact Z-pinch Facility “Sparky” and Development and Tests of Focusing Crystal X-ray Spectrometers¹ M.C. COOPER, V.L. KANTSYREV, A.S. SAFRONOVA, I.K. SHRESTHA, K.A. SCHULTZ, V.V. SHLYAPTSEVA, M.E. WELLER, A. STAFFORD, E.E. PETKOV, M.T. SCHMIDT-PETERSEN, M.Y. LORANCE, W. CLINE, C. DAVIDSON, University of Nevada, Reno, NV 89557 USA — The compact x-ray/EUV facility “Sparky” at the UNR Physics Department’s Plasma Physics and Diagnostics Laboratory (PPDL) was renovated to obtain high density and temperature plasmas with gas-puff z-pinch experiments. The renovated facility will be used for plasma dynamics and radiation studies, x-ray spectroscopic research, benchmarking of theoretical codes, calibration of x-ray and diagnostic instrumentation, and education and training of UNR physics students. The SCREAMER code was used to model the device’s circuit and predicted a 200-230 kA current pulse with a rise time of 600 ns. To develop new diagnostics, a vertical focusing Hamos type spectrometer with a cylindrically bent mica crystal and a horizontal focusing Johann type spectrometer with a cylindrically bent Si crystal were designed for x-ray spectroscopy of the gas jets. Both spectrometers were tested with the NTF Leopard fs laser and captured x-ray spectra from laser interactions with Ar and Kr gas-puff jets from a supersonic nozzle.

¹The work was supported by the DOE/NNSA cooperative agreement DE-NA0001984, and in part by DE-NA0002075, and the DTRA grant HDTRA1-13-1-0033.

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Date submitted: 10 Oct 2014

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