

Abstract Submitted
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X-ray spectrometer and spectropolarimeter for the study of high temperature and density laboratory plasmas¹ M.C. COOPER, V.L. KANTSYREV, A.S. SAFRONOVA, I.K. SHRESTHA, V.V. SHLYAPTSEVA, K.A. SCHULTZ, E.E. PETKOV, W. CLINE, C. DAVIDSON, Physics Department of the University of Nevada, Reno, NV, USA — Facilities like UNR's Zebra pulsed-power generator, femtosecond Leopard Laser, and Sparky Facility provide platforms to search for efficient plasma sources of x-ray and extreme ultraviolet (EUV) radiation. Two new instruments developed to measure radiation from plasmas are a high spectral resolution x-ray focusing spectrometer and a spatially resolved x-ray spectropolarimeter. The Johann-type focusing x-ray spectrometer uses a concave Si crystal as the selectively reflecting element. It recorded experimental laser plasma spectra from K-shell Ar (3.91-4.58 Å) and L-shell Kr (5.26-5.73 Å) ions with resolutions greater than $\lambda/\Delta\lambda = 1200$. A spectropolarimeter is being developed that uses two convex α -quartz crystals as the selectively reflecting elements and will observe radiation from L-shell Mo (4.6-4.85 Å) ions in two orthogonal polarization directions with 1D spatial resolution. The x-ray spectropolarimeter is intended to look for anisotropy of processes in z-pinch or laser plasmas. Application of these two new devices will add to the diversity of measurements of high temperature and density plasma parameters.

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Matthew Cooper
Physics Department of the University of Nevada, Reno, NV, USA

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