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Time-Resolved 1-10 keV X-ray Spectrometer for the Z Machine at Sandia National Laboratory

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Beamline: X8A

Introduction: We have designed, fabricated, and calibrated a fast, time-resolved 1-10 keV x-ray spectrometer for use at the Z machine at Sandia National Laboratory.

Methods and Materials: The instrument has two convex cylindrical crystals (PET and KAP) and provides continuous coverage from 1-10 keV in twenty time-resolved spectral channels with silicon diode detectors.

Results: We have performed temporal and spectral calibration of the spectrometer at the Pulsed X-ray Facility at the Bechtel Nevada Los Alamos Office, and at beamline X8A at the National Synchrotron Light Source. Initial field tests of the spectrometer were performed successfully with plasma radiation produced by an imploding double-nested stainless steel wire array on the Z machine at Sandia National Laboratory.