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X-Pinch Measurements Performed on a 1-microsecond Current Generator.[1] RICHARD APPARTAIM, BULMUO MAAKUU, Florida A&M University, Tallahassee FL — A 320 kiloamp, 1-microsecond current generator based on a simple L-C discharge has been used to drive 2-wire and 4-wire X-pinches of tungsten, aluminum, titanium, etc., with diameters ranging from 13–25 microns. We report the results of measurements of the characteristics and dynamics of the X-pinch using silicon p-n junction photodiodes, a diamond radiation detector, pinhole cameras, x-ray spectroscopy and interferometry. The time duration of the observed x-ray pulses as well as the difference in the spectral sensitivities of the silicon and diamond radiation detectors provide a way to determine what fraction of the emitted x-rays is soft (e.g. with photon energy from 1 keV to 5 keV that may be emitted from high temperature plasmas at the hot spots) and what fraction is due to dense plasma interactions with electron beams accelerated across mini-diodes near the X-pinch crossing point. We address this issue as well as present the results of spectroscopic measurements of plasma parameters.

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