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New X-Pinch Platform and Faraday Rotation Diagnostic for the MAIZE Pulsed Power Facility GEORGE V DOWHAN, NICHOLAS M JORDAN, Univ of Michigan - Ann Arbor, SIMON N BLAND, SERGEI V LEBEDEV, ROWLAND A SMITH, LEE SUTTLE, Imperial College London, RYAN D MCBRIDE, Univ of Michigan - Ann Arbor — X-pinches, formed by driving intense current through the crossing of 2 or more wires, provide an excellent platform for the study of "micro-pinches" due to their propensity to generate a single micro-pinch at a predetermined location in space (i.e., where the wires cross). Ideally, micro-pinches compress to very small radii (˜1 m) leading to pressures on the order of ˜1 Gbar for currents on the order of ˜0.1 MA. However, the fraction of the total current that is driven through the dense micro-pinch plasma at small radii versus that being shunted through the surrounding coronal plasma at larger radii is not well known. To allow for the study of micro-pinches and their current distribution on the 1-MA MAIZE facility, an imaging Faraday rotation diagnostic, as well as corresponding X-pinch load hardware, were developed. Presented are preliminary experimental results investigating the current distribution in various multi-wire X-pinches as well as hybrid X-pinches. This work was supported by the DOE Early Career Research Program under Grant DE-SC0020239 and by the NNSA SSAP under Cooperative Agreement DE-NA0003764.

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