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Energetic electron beam dynamics in 1 MA x-pinchs and wire arrays by means of hard x-ray polarimetry ISHOR SHRESTHA, VICTOR KANTSYREV, ALLA SAFRONOVA, VIDYA NALAJALA, SHIVAJI POKALA, STEVE BATIE, DAN MACAULAY, BRUNO LEGALLOUDEC, University of Nevada, Reno — The electron beams characteristics of x-pinchs and wire arrays constructed from Al, Mo, W, combined Mo/W, Al/Mo, Al/W, Cu, stainless steel x-pinch were studied on the 1MA, 100 ns rise time Zebra generator. New time-resolved hard x-ray polarimeter (HXP) based on Compton scattering effect have been used together with fast x-ray detectors, time-gated pinhole camera, and spectrometers. The electron beams (energy more than 35 keV) have been investigated by the measurement of the polarization state of bremsstrahlung radiation emitted from plasma. An estimated degree of polarization varies from 15% to 80% for various types of plasma electron beams. It was assumed that in most cases the electron beams were well collimated in direction from cathode to anode. The hard x-ray polarization data were compared to slopes from other x-ray diagnostics on 1MA z-pinch generator “Zebra.” Work supported by the DOE/ NNSA under UNR grant DE-FC52-01NV14050 and by Sandia National Laboratories UNR Grant 111480.

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