

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Implosion Dynamics and X-Ray Production in Cylindrical Wire Arrays 1-16 mm in Diameter ABDELMOULA HABOUB, VLADIMIR IVANOV, VLADIMIR SOTNIKOV, ALEXEY ASTANOVITSKIY, ALEXEY MOROZOV, SARA ALTEMARA, CHRIS THOMAS, VIDYA NALAJALA, STEVE BATIE , University of Nevada, Reno — Implosions and x-ray production in low wire number cylindrical wire arrays 1-16 mm in diameter were investigated in the 1-MA Zebra generator. Wire arrays 2-5 mm in diameter produce enhanced soft x-ray power in comparison with 12-16-mm diameter loads. Compact cylindrical arrays generate a high power x-ray pulse with a short 6-ns rising edge despite a fall of calculated kinetic energy of imploding plasma. Ablating plasma accumulates faster in volume of compact arrays and small-scale plasma turbulence could be involved to fast plasma heating. In 1-mm 8 wire cylindrical loads radiated power drops and the soft x-ray pulse has a multi-burst structure that is similar to x-ray radiation of the single wire z-pinch. Implosion dynamics and precursor formation are compared in wire arrays of different diameters. Work was supported by the DOE/NNSA under UNR grant DE-FC52-06NA27616.

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Date submitted: 29 Aug 2007

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