Abstract Submitted for the DPP05 Meeting of The American Physical Society

Time Gated Imaging of Cylindrical Wire Array Z-Pinches Using X-Pinch Backlighting JON DOUGLASS, JOHN GREENLY, DAVID HAMMER, RYAN MCBRIDE, SERGEI PIKUZ, TANYA SHELKOVENKO, Cornell University - X-Pinch radiography has been used routinely at Cornell for more than 10 years to produce high quality x-ray images with excellent spatial and temporal resolution [T.A. Shelkovenko et al., Phys. Plasmas 8, 1305-1318 (2001).]. This imaging technique is being used on the COBRA accelerator at Cornell to study the early stages of wire-array Z-pinches. The configuration is similar to those used at the on the Angara-5-1 facility [E.V. Grabovskii et al., Plasma Physics Reports 30, 121–127 (2004).] and on MAGPIE [S.V. Lebedev et al., Rev. Sci. Instrum., 72, 671-673 (2001).]. Images have been obtained that show the evolution of wire structure and instabilities. X-pinch wire parameters are varied in order to shift the timing of the x- pinch x-ray burst relative to the start of the z-pinch current pulse. The ability to control x-pinch radiation timing will be discussed along with the dynamics of the exploding wires in the wire-arrays. This research was supported by the Stewardship Sciences Academic Alliances program of the National Nuclear Security Administration under DOE Cooperative agreement DE-FC03-02NA00057.

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Date submitted: 02 Aug 2005

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