Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Study of laser driven magnetic fields in the coil target VLADIMIR IVANOV, A. L. ASTANOVITSKIY, N. L. WONG, K. J. SWANSON, University of Nevada, Reno, NV89557, I. A. BEGISHEV, J. BROMAGE, J. R. DAVIES, A. V. MAXIMOV, C. MILEHAM, C. STOECKL, University of Rochester, NY 14623, USA — Laser driven magnetic fields in coil targets were studied with the MTW laser at the Laboratory for Laser Energetics, University of Rochester. The magnetic field in coil targets was generated by the laser beam with energy of 25 J and pulse durations of 2.4 ns and 70 ps. The longitudinal magnetic field was measured by the Faraday rotation of the CW laser beam at the wavelength of 405 nm in the small glass disc. Axial magnetic fields of 10-20 T were measured in coils. An increase of intensity in the short pulse regime by a factor of 30 resulted in the increase of the magnetic field in 1.6-2 times. A pulse of the magnetic field showed a short 0.3-2ns rising edge and long sub-microsecond falling edge. A long falling edge can be produced by relaxation of the magnetic energy accumulated in the coil through the plasma-filled capacitor. The work was supported by the DOE grant DE-SC0016500. The MTW Facility is supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

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Date submitted: 08 Jul 2019 Electronic form version 1.4