

Abstract Submitted  
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**A Faraday rotation diagnostic for Z pinch experiments<sup>1</sup>** K.W. GAO, LANL, UNM, T.P. INTRATOR, T.E. WEBER, C.B. YOO, J. KLAREN-BEEK, LANL — The MagLIF experiment is an approach to Magneto Inertial Fusion (MIF) that will compress a laser preheated magnetized plasma inside a small sub cm size beryllium capsule and the magnetic field inside. A good measurement of the compressed magnetic field will help us understand how the compression proceeds, and the time scale over which field diffuses out. We are working on a first step to the direct measurement of vacuum magnetic field (expected to be mostly Bz) compression time history, potentially space-resolved, without a plasma fill. A small magneto-active section of optical fiber can measure magnetic fields in the 1-1000 Tesla range. Directly measured vacuum Bz is an initial but important step towards validating the codes supporting MagLIF. The technology will use a Terbium doped optical fiber as a Faraday rotation medium. The optical path and hardware is simple, inexpensive, and small enough to fit inside a MagLIF capsule, and can be radiation hardened. Low noise, optically coupled magnetic field measurements will be possible for vacuum MagLIF shots.

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