

Abstract Submitted
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Faraday-Rotation Measurements of Megagauss Magnetic Fields Produced by the Zebra Z-Pinch Generator CHRISTOPHER PLECHATY, RADU PRESURA, University of Nevada, Reno — Experiments performed at the Nevada Terawatt Facility have applications related to laboratory astrophysics, radiation sources, and fusion research. Some of these experiments require megagauss magnetic fields in a vacuum environment for hot plasma confinement or stabilization. These required ultrahigh magnetic fields will be produced using Zebra, a fast pulse generator, and will be measured using the Faraday effect. The Faraday effect is the rotation of the polarization plane of a light beam traveling through a Faraday-active material along the magnetic field. The amount of rotation observed is proportional to the magnitude of the magnetic field and the length of the Faraday-active material. The proportionality constant is called the Verdet constant. To make local magnetic field measurements that do not perturb the experiment, the setup for the Zebra experiments uses small disks (3 mm in diameter, 2.0 +/- 0.1 mm thick) of flint glass with a Verdet constant of 15 rad/(Tm) at 532 nm. This Verdet constant allows our setup to be sensitive with a broad range of field strengths, from 10 T to 300 T (0.1-3 MG). Progress made with this diagnostic setup shall be presented.
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Christopher Plechaty
University of Nevada, Reno

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