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Magnetic field measurements for study of fast electron transport in magnetized HED plasma HIROSHI SAWADA, BRANDON GRIFFIN, RADU PRESURA, SHOWERA HAQUE, YASUHIKO SENTOKU, Department of Physics, University of Nevada Reno — Interaction of megagauss magnetic fields with high energy density (HED) plasma is of great interest in the field of magnetized plasma. The field changes fundamental properties of the HED plasma such as thermal and magnetic diffusion. A coupled capability utilizing the 1.0 MA Zebra pulsed power generator and the 50 TW Leopard laser at Nevada Terawatt Facility enables to create such a condition for studies of magnetized plasma properties. We have conducted an experiment to measure magnetic fields generated by a 1.0 MA, 100 ns Zebra pulsed current in stainless steel coils. Using a 532 nm continuous laser from a single longitudinal mode laser system, the temporal change in the magnetic field was measured with the Faraday rotation in F2 glass. The probe laser passing through the 1.5 mm in radius and 1.75 mm thick glass placed in the vicinity of the inductive coils was split with a Glan-Taylor prism to measure vertical and horizontal polarization components with photodiodes. We will present the analysis of the experimental result and a design of a coupled experiment for study of fast electron transport in the magnetized plasma.

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