**Laser-driven quasi-static magnetic fields for magnetized high energy-density experiments**

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The use of seed magnetic-fields (B-fields) in laser-driven target-compression experiments is expected to lead to > 10 kT B-fields across the compressed core due to advection of the in-flow plasma. B-fields exceeding 10 kT are promising for magneto-inertial fusion since they reduce electron thermal conduction. Studying the formation of these compressed B-fields may also improve our understanding of magnetized astrophysical plasmas or extended magnetohydrodynamics. To reach compressed B-fields exceeding 10 kT, one important challenge is to generate strong seed B-fields on major laser facilities. Where external pulsed power hardware is not available, it is possible to use laser-driven coil (LDC) targets to generate a multi-tesla field. We have tested LDCs on several nanosecond laser facilities under laser drive conditions similar to those at the Laser MegaJoule (LMJ). The goal was to predict the B-fields that might be achieved on LMJ by benchmarking a laser-driven diode model of B-field generation. At the LULI2000 and OMEGA facilities we used comparable laser intensities, ~1015-1016 W/cm2, at 1.06µm and 0.35µm wavelengths respectively. We generated discharge currents of ~20 kA and ~8 kA yielding B-fields of ~50 T and ~6 T respectively, with targets of different size. Where possible, magnetic fields were measured using proton deflectometry directed along two axes of the target. Comparing our experimental deflectograms with proton tracking simulations enables us to identify various deflection features that can be linked to the looping current or static charging of the coil’s wire surface. Measured discharge currents are consistent with predictions from our model for all the experimentally tested conditions, which give grounds for the successful use of LDCs on large-scale facilities like LMJ.