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**Design and calibration of a solenoid used on magnetized plasma experiments and B-dot probes using commercial electronic components**[1]

RAUL MELEAN, SALLEE KLEIN, HEATH LEFEVRE, PAUL CAMPBELL, University of Michigan - Ann Arbor, JACKSON WILLIAMS, ELIJAH KEMP, DEREK MARISCAL, Lawrence Livermore National Laboratory, MARIO MANUEL, General Atomics, RYAN MCBRIDE, CAROLYN KURANZ, University of Michigan - Ann Arbor — Magnetic fields play an important role in many areas of plasma physics. Sometimes, such areas call for the generation of strong magnetic fields (>5T) in compact volumes. In addition to the engineering challenges of fabricating a powerful, reusable electromagnet design, measurement and calibration of such powerful magnetic fields and field geometries requires the use of precise and often disposable measuring devices that can be easily adapted to any experimental set-up. Here, we present our approach to both sides of this problem. First, we show the construction of a solenoid designed to produce an axial magnetic field with strength in the central gap in the order of 10T. Second, we show a method for fabricating B-dot probes using commercially available inductor elements commonly used in circuit board construction with a study of the performance in strong (10T) pulsed magnetic fields.

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