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Probing Maxwell's Equations with a 3D Printer GALEN HELMS, EMMANUEL RIVAS, BORIS KIEFER, New Mexico State University — Scientific and engineering applications have become increasingly multidisciplinary requiring the mastery of more than one field to be an effective communicator who can mediate between different fields. Engineering Physics at New Mexico State University provides such opportunities. Here, we emphasize putting classroom knowledge to practical use for using the motion system of a 3D printer. In this application we replaced the extruder of a 3D printer with a Hall probe and reprogrammed the 3D printer firmware to measure the x, y, and z-component of a magnetic field along a predefined path Here we will discuss the results of two different Hall probes for a ceramic and a NdFeB magnet. We will discuss our observations that were taken within only 30 minutes across a 6 cm x 6cm area. The short duration of the measurements provides an innovative tool for teaching Electricity & Magnetism and eliminates/reduces traditional academic boundaries between science and engineering.

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