Ryan King-Shepard and Diana Lamaute
6.111 Abstract

Project title:
Self-Correcting Hover Table

Project team:
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Abstract:
  In honor of Back to the Future's hoverboard, we will be designing a floating table that corrects its position whenever objects are placed on it in order to remain flat. The table will consist of eight bismuth corner plates, 4 magnets corner pieces, and a flat surface such that the surface and magnets are sandwiched by 2 bismuth plates each. A base plate will apply a magnetic force on the magnets causing the table to float while the bismuth plates will apply a counter force that will hold the table's position in mid-air. The magnet force with be controlled by a PID controller implemented on the FPGA that will ensure that each side the table will maintain a certain height. Taking analog height reading from sensors attached to the base and converting them to digital; the controller will output various analog waves to common-emitter current amplifiers that will create the magnetic force applied to the table.