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Stabilizing the Magnetic Field using a Proportional-Integral-Derivative Feedback Circuit for Square Helmholtz Coils in a Laser-Cooled Atoms Experiment[1] CAITLYN WARD, JONATHAN WRUBEL, Creighton Univ — Achieving magnetic field stability below the 1 mG level typically requires an active feedback system. We present our system for actively stabilizing the magnetic field in our laser-cooled atom experiment. Our system measures the magnetic field from DC to 1 kHz with a low-noise fluxgate magnetometer and provides feedback to a pair of square Helmholtz coils using an analog Proportional-Integral-Derivative feedback circuit.

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