

Magnetic Field Control for Cooling Strontium Atoms in an Optical Dipole Trap

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Producing dense clouds of cold atoms for the study of light scattering requires precise control of magnetic fields in the atom cloud region in real time. This study provides an overview of the strontium cold atom experiment and outlines the procedures for constructing a set of Push-Pull circuits to acquire the control in the cloud region. These circuits, powered by direct current sources, will control the current sent to magnetic field coils in a Helmholtz configuration based on an analog signal from a control computer, crucial for compensating the magnetic field in the optical dipole trap. The effect of magnetic field control will be characterized in terms of the position of the atomic cloud based on the current in the coils. The goal is to achieve real-time control with milligauss-level precision, necessary for compensating the fields and producing cold, dense atomic clouds.