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**Dynamically Tuned Magnetic Potentials** JAMES STICKNEY, BRIAN KASCH, Space Dynamics Laboratory, SPENCER OLSON, MATTHEW SQUIRES, Air Force Research Laboratory — For many possible applications using trapped cold and ultra-cold atoms, precise control of the confining potential is required. We present a method for generating algebraically precise magnetic potentials along the axis of a cold atom waveguide. This method uses sets of paired conductors providing control over the even and odd contributions of the polynomial potential along one axis of the trap. Various field configurations can be realized, including double wells, triple wells, and filtered harmonic traps with suppression of higher order terms. The design, fabrication, and implementation of a suitable dual-layer atom chip, with modest experimental requirements will be presented.

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