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Multiple Isotope Magneto Optical Trap from a single diode laser¹ EDUARDO GOMEZ, VICTOR VALENZUELA, SAEED HAMZELOUI, MONICA GUTIERREZ, Instituto de Fisica, UASLP — We present a simple design for a Dual Isotope Magneto Optical Trap. The system requires a single diode laser, a fiber modulator and a tapered amplifier to trap and completely control both ⁸⁵Rb and ⁸⁷Rb. We generate all the frequencies needed for trapping both species using the fiber intensity modulator. All the frequencies are amplified simultaneously with the tapered amplifier. The position and power of each frequency is now controlled independently on the RF rather than on the optical side. This introduces an enormous simplification for laser cooling that often requires an acousto-optic modulator for each frequency. The range of frequency changes is much bigger than what is available with acousto-optic modulators since in our case is determined by the modulator bandwidth (10 GHz). Additional isotopes can be simply added by including additional RF frequencies to the modulator and extra beams for other uses can be produced the same way.

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