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Progress Towards Construction of A Magneto-Optical Trap to Study the Spinor Dynamics of a Bose Thermal Gas[1] MICHAEL DORIS, CARISSA LEVEILLE, JOSEPH LEVINE, JOSEPH PECHKIS, ANNA PETROVA-MAYOR, HYEWON PECHKIS, California State Univ-Chico — We present our progress towards creating ultracold gases to study the spinor dynamics of a Bose thermal gas. We have designed, constructed, and tested low-cost, external-cavity diode lasers (ECDLs) to operate below the rubidium D2 transition at 780 nm for use in an undergraduate-only research laboratory. The ECDL operates in a Littrow configuration with a mode-hop free range of 1-2 GHz and a linewidth < 6 MHz. The trap and repump lasers will be frequency-stabilized using a sub-Doppler Dichroic Atomic Vapor Laser Lock (DAVLL). The locking electronics are discussed, as well as the vacuum chamber design.

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