Abstract Submitted
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A tunable ECDL at 480 nm for ^{87}Rb Rydberg physics[1] DARIO D'AMATO, JOHN HUCKANS, Bloomsburg University of Pennsylvania — We have designed and built a tunable nominal 50 mW external cavity diode laser at 480 nm to excite ^{87}Rb atoms to high-lying Rydberg states via the two-photon $5S_{1/2} \rightarrow 5P_{3/2} \rightarrow nD_{5/2}$ pathway (in conjunction with a 780 nm laser). Our design is based on a low-cost nominal 488 nm single transverse mode laser diode, without any special coating or wavelength post-selection requested of the manufacturer. Stable and mode-hop free tuning over a wide frequency range has been achieved through a careful analysis of the grating feedback geometry. We have also designed and started construction of an optical transfer cavity stabilization system to achieve a nominal 10 kHz laser linewidth.

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