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Pulse Controlled Frequency-Chirped Laser Light at Large Detuning for Use in Atomic, Molecular, and Optical Physics Experiments BRIAN KAUFMAN, TRACY PALTOO, TANNER GROGAN, MATTHEW WRIGHT, Adelphi University — We have developed a laser system that generates a moderate frequency chirp (1 GHz in 4 ns) at a large controllable detuning (˜7 GHz) using an electro-optical phase modulator in an injection-lock laser system. This system can effectively pulse the laser on timescales less than 3 ns by turning on and off the injection lock. This system can also create arbitrary frequency chirp shapes on the laser on the tens of nanosecond time scales with a cutoff frequency of 200 MHz. As a test of the laser system, we have explored excitation of a room-temperature atomic Rb gas with frequency-chirped light. We have found that our experimental results agree with the solution to the Optical Bloch equations for the same parameters.

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