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Producing and Diagnosing Chirped Nanosecond Pulses C.E. ROGERS III, J.L. CARINI, J.A. PECHKIS, P.L. GOULD, University of Connecticut — We report on the production and characterization of phase- and amplitude-modulated pulses generated with the aid of fiber-based electro-optic modulators. Arbitrary frequency chirps are produced using an arbitrary waveform generator to drive a phase modulator within a fiber delay loop which also contains a self-injection-locked 780 nm diode laser [1]. To control the pulse amplitude, the light is then sent through a fiber-based electro-optical amplitude modulator, also driven with an arbitrary waveform generator. The resulting chirped pulses are then amplified using a tapered amplifier system. The frequency chirp, including residual phase modulation from the amplitude modulator, is characterized by heterodyning the output pulse with a fixed-frequency reference laser. Such pulses will be useful in controlling collisions between ultracold Rb atoms. This work is supported by DOE.

[1] C.E. Rogers III, et al., J. Opt. Soc. Am. B 24, 1249 (2007).

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