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Low-cost laser diode pulse generator for quantum information applications

A simple short-pulse generator circuit based on electronic gates is designed for short electric pulse of about 12.00 ns at Full Width at Half Maximum (FWHM) and 2.96 Volt amplitude for driving a laser diode. Using our circuit with a 780 nm laser diode designed and fabricated for producing short light pulses. The circuit utilizes an AND gate, a XOR gate, and a common function generator, provides a repetition rate from DC up to 1 MHz. The laser pulses were generated and then detected via an avalanche photodiodes (APD). This finding can benefit the field of light-based quantum information including single photon experiments.

Primary authors: Dr BUATHONG, Sitti (1Department of Physics, Faculty of Science, Burapha University, ChonBuri Province, 20131, Thailand.); Ms JANPOON, Jirapat (Department of Physics, Faculty of Science, Burapha University, ChonBuri Province, 20131, Thailand.); Mr SUKSAWAT, Nattawut (Department of Physics, Faculty of Science, Burapha University, ChonBuri Province, 20131, Thailand.); Dr DEACHAPUNYA, Sarayut (Department of Physics, Faculty of Science, Burapha University, ChonBuri Province, 20131, Thailand.)

Presenter: Ms JANPOON, Jirapat (Department of Physics, Faculty of Science, Burapha University, ChonBuri Province, 20131, Thailand.)

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