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Title:All-optical carry lookahead adder with the help of terahertz optical asymmetric demultiplexer
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Abstract:An all-optical model of carry lookahead adder (CLA) implemented with a semiconductor optical amplifier (SOA)-assisted Sagnac interferometer (TOAD) is presented. The model accounts for the SOA small signal gain, linewidth enhancement factor, the switching pulses energy and width and the Sagnac loop asymmetry. Adder is a very basic component in a central processing unit. The CLA is the highest speed adder nowadays. Theoritical model is presented and verified through numerical simulation. The method promises both higher processing speed and accuracy. The model can be enhanced the functionality in which carry lookahead adder is the basic building block.
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