9. Title: All-optical prefix tree adder with the help of terahertz optical asymmetric demultiplexer
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Abstract: We propose and describe an all-optical prefix tree adder with the help of a terahertz optical asymmetric demultiplexer (TOAD) using a set of optical switches. The prefix tree adder is useful in compound adder implementation. It is preferred over the ripple carry adder and the carry lookahead adder. We also describe the principle and possibilities of the all-optical prefix tree adder. The theoretical model is presented and verified through numerical simulation. The new method promises higher processing speed and accuracy. The model can be extended for studying more complex all-optical circuits of enhanced functionality in which the prefix tree adder is the basic building block.