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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
IV B. Tech, II-SEMESTER
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Effective RCA design using quantum dot cellular automata

ABSTRACT

QCA technology is a new platform, which is a transistor less and wire-less technology, hence it is one of the best alternatives to CMOS technology for developing low power and high- speed digital circuits at nano-scale level. The limitations of CMOS technology such as large number of transistors and wire connections in a small area was overcome by QCA technology. Therefore, we have chosen the QCA technology. Adder is a basic architecture in constructing all digital circuits. First, a full adder is designed in both QCA as well as Mentor Graphics which has improved performance in propagation delay and cell count. Then with the help of 4 full adders a 4-Bit Ripple Carry Adder is implemented in QCA and compared the results with the existing RCA in QCA. From the comparison, it is found that the proposed ripple carry adder has better performance than the existing adder circuits.

Key words: Quantum dot cellular automata (QCA), Ripple carry adder, Majority voter gate, 1-bit full adder

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