

## ABSTRACT

Integrated circuits have become much smaller, robust and less expensive revolutionizing the electronics world. Over the decades, CMOS have played a crucial role in the integrated circuits. The exponential scaling and increase in processing speed have been provided by CMOS technology for implementing VLSI systems. The present CMOS technology does not sustain the growth levels expected by the semiconductor industry. Nanotechnology is proposed as a solution to the problem because it overcomes the existing power dissipation and also because of the growing demand for denser and faster integrated circuit. Quantum dot-Cellular Automata technology (QCA) emerges as an effective alternative of CMOS-VLSI. Any digital circuit can be implemented by utilizing the QCA-based majority gates. In this work, a approximate adder implemented with quantum-dot cellular automata (QCA) is proposed. The most basic arithmetic operation is the addition of two binary digits, i.e. bits. In many fields the adder plays an important role but in most of the field the accuracy is not in concern. So we proposed a novel approximate adder of quantum dot cell automata (QCA). The proposed adder is used to reduce the circuit complexity and time delay with low error rate. The circuit complexity reduction is achieved by reducing the majority gate in the adder circuit. The operation of QCA circuits is simulated and verified using QCA Designer bistable vector simulation.