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Fault-Tolerant Characteristics of Quantum-dot Cellular Automata Devices MAHFUZA KHATUN, Ball State University, GABRIEL ANDUWAN, Papua New Guinea University of Technology., IOAN STURZU, Texas A&M University — The operational behavior of the Quantum-dot Cellular Automata (QCA) devices has been investigated regarding both dot displacement and temperature effects. Each of the breakdown characteristics displayed unique features for every particular QCA device. We have found that the characteristic features of the basic logic QCA devices are inherited by the higher or complicated QCA devices, such as the full adder. It was observed that the presence of a crossover of QCA lines in a full adder design was a major factor for the breakdown. Thus, a proposed full adder QCA device without a crossover was seen to improve the successful operation of a full adder.

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