Abstract

The advantage of defect analysis on Quantum dot Cellular Automata (QCA) is that defects can be predicted (which are probable to arise during fabrication phase) at analytical phase of QCA design. Since QCA is probabilistic in nature, the probability theory is introduced here to analyze the defect/fault tolerance at gate level of QCA design. We proposed a Bayesian network based Probabilistic Defect Analysis Model (PDAM) to analyze the defect at analytical phase of QCA design. Proposed model is applied over QCA wire, three input Majority voter, Five Input Majority voter and the result is compared with QCADesigner to justify the importance of PDAM approach over exhaustive simulation process with QCADesigner.
Probabilistic Defect Analysis Model for Quantum dot Cellular Automata Design at Analytical Phase

References

- Kunal Das, Debashis De, Mallika De &quot; Tile Based Approach To Design Logic Circuit And Its Defects Analysis For Quantum Dot Cellular Automata &quot;, In Quantum Dots and Quantum Cellular Automata: Recent Trends and Applications, Nova Science Publishers, Inc. , USA. [In press]
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Radius of effects  Five Input Majority Voter  Bayesian Network  PDA Model  Conditional probability