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Quantum description and dynamics of computer bits

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This abstract is about a bottom-up view of how quantum computation can be practically applied by bits of computers which are in atomic scale. At atomic scale of computer bits, only quantum mechanical effects may change the nature of computation in computers. It is also paramount to know that to adequately study the properties and characteristics of objects; it is only at microscopic level that a good understanding can be achieved. By creating a wave function of a quantum computer, which consists of a superposition of many computations taking place simultaneously, we can develop a computer (quantum computers) that can solve polynomial time problems that have no polynomial time solution. The reduction of computer bits to atomic scale does not violate any laws of classical physics. The physical apparatus used to perform computation is independent on the time that was polynomial to the input but that is only true for computers operating the principle of classical physics, but quantum computers as the case may be can solve in polynomial-time problems that have no polynomial time solution on any classical machine. Since the qubits of a computer can be related to a two state system, a superposition of those two states is possible just like the spin-up and spin-down states of an electron in an atom. The time evolution of the two state bits system of a computer as mentioned earlier can be accurately controlled by the application of time-dependent magnetic field described by the Hamiltonian.

Biography

Chidiebere Anigbo Alphonsus has completed his Master's degree from the University of Uyo. He also has completed his degree in Physics and Astronomy from the University of Nigeria, Nsukka. He is currently a Lecturer in the Physics department of the Institute of Technology and Management, Ugep Cross River state and is the Head of the Curriculum Development team saddled with the responsibility of developing a synergic curriculum which reflects both the local and international standards and relevant topics which meet individual students need.

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