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A Study on the Basics of Quantum Computing

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Abstract: *Quantum theory is one of the most successful theories that have influenced the course of scientific progress during the twentieth century. It has presented a new line of scientific thought, predicted entirely inconceivable situations and influenced several domains of modern technologies. There are many different ways for expressing laws of science in general and laws of physics in particular. Similar to physical laws of nature, information can also be expressed in different ways. The fact that information can be expressed in different ways without losing its essential nature, leads for the possibility of the automatic manipulation of information. All ways of expressing information use physical system, spoken words are conveyed by air pressure fluctuations: "No information without physical representation". The fact that information is insensitive to exactly how it is expressed and can be freely translated from one form to another, makes it an obvious candidate for fundamentally important role in physics, like interaction, energy, momentum and other such abstractors. This is a project report on the general attributes of Quantum Computing and Information Processing from a layman's point of view..*

Keywords: computation, EPR, quantum mechanics, superposition, unitary transformation, decoherence

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