

# Quantum walks

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Quantum computation is an interdisciplinary scientific field that exploits the property of quantum mechanics. It has been shown that quantum computation outperforms classical algorithm in many specific areas.

Random walks are frequently used and they are a powerful computation model in mathematics, natural science and computer science. Quantum walks are the quantum counterpart of classical random walks. By utilizing the property of quantum superposition, quantum walks sometimes achieve exponential algorithmic speedup over classical computers. We will give a look at the basic notions of quantum information theory and present the general theory behind quantum walks.

## References

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- [3] C. Moore, A. Russell, "Quantum Walks on the Hypercube", in *International Journal of Quantum Information*, 29 April 2001.