

Abstract Submitted
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Relativistic Connection of Continuous and Discrete Quantum Walks FREDERICK STRAUCH, National Institute of Standards and Technology — Quantum algorithms, based on a quantum-mechanical generalization of random walks, have been shown to be very effective at solving local search problems. These quantum walks come in two very different forms (discrete and continuous-time) with surprisingly similar properties. An open problem has been to identify just what makes these two walks so similar. In this talk I present the analytical connection of these two walks, by way of an analogy with properties of the Dirac equation, including entanglement, zitterbewegung, and most importantly, relativistic wave-packet spreading.

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