Quantum Networks

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Abstract

Traditional networks enable communication between physically separate computers, as well as the powerful distributed computing paradigm. Similarly, quantum networks present a variety of technological and fundamental prospects worthy of further investigation, such as remote quantum error correction and the generation of quantum many-body systems with customizable topology. In this presentation, we discuss proposed quantum-information processing protocols using a quantum network. Then, we cover recent experimental progress in constructing such a network, including the demonstration of requisite network functionality. We conclude with an analysis of the experimental results from the work presented and highlight the next steps toward a "Quantum Internet".