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The Fermilab and Illinois Express Quantum Networks —Synergies with HEP Science

Thursday, 9 November 2023 08:50 (20 minutes)

We present the latest developments of the Fermilab and Illinois Express Quantum Networks experiments. These operating quantum networks, with deployed infrastructure spanning the Chicagoland metropolitan area and connecting Fermilab and Argonne National Labs, spanning more than 50 km, have achieve record quantum teleportation and entanglement swapping fidelities using time-bin photonics qubits with the existing fiber optics infrastructure. We will discuss a program to increase the information rate and distances as well as to realize more complex protocols and how the existing network infrastructure including the classical backbone with a record timing synchronization below 3 ps can enable distributed sensing experiments with HEP applications.

Early Career

Yes

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