

Fault-tolerance with bosonic qubits

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Abstract

Recently a new paradigm of quantum computing has gained momentum in which a qubit is encoded in non-classical states of a quantum oscillator. Such qubits are known as continuous-variable or bosonic qubits and their primary advantage is that they can be made robust against certain sources of noise by design or by active error correction directly to the physical oscillator mode. I will discuss recent advances in the development of bosonic qubits in the circuit-QED platform and show how their inherent properties can be leveraged for hardware-efficient fault-tolerant quantum computation.
