

Abstract Submitted
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How Often Must We Apply Syndrome Measurements? YAAKOV WEINSTEIN, MITRE — Quantum information is encoded into Quantum Error Correction codes to protect it from decoherence. The detection and correction of possible errors is done via syndrome measurements. Standard quantum fault tolerance approaches assume that syndrome measurements are applied after the implementation of any gate. However, this is resource intensive utilizing much time and many qubits. In this talk we explore whether it is necessary to apply syndrome measurements so often. We examine different syndrome measurement techniques for the $[[7,1,3]]$ code and compare the output state fidelity based on how often syndrome measurements are applied and the error environment. In this way we demonstrate the tradeoff between accuracy and resource consumption.

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