

Quantum LDPC codes and decoding challenges

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Quantum Low-Density Parity-Check codes are promising candidates for scalable, fault-tolerant quantum computing. Represented by sparse parity check matrices, these codes share challenges with their classical counterparts —iterative decoding can fail to converge, may converge to an erroneous estimate, or return degenerate errors. In this talk, we will examine the structure of failure inducing sets (sets of nodes that, when initially in error, result in a decoding failure), and how the chosen graph representation may affect the presence of these sets.