

Abstract Submitted
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High threshold 2D nearest neighbor quantum computation.

AUSTIN FOWLER, PETER GROSZKOWSKI, Institute for Quantum Computing, Waterloo, ROBERT RAUSSENDORF, University of British Columbia — We describe a quantum computation scheme on a 2D nearest neighbor coupled square lattice of qubits that requires relatively few physical qubits per logical qubit, permits logical operations between arbitrarily distant logical qubits in almost constant time and has a physical gate threshold error rate of almost 1%. To the best of our knowledge, no other quantum computation scheme simultaneously possesses all of these desirable properties.

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