

UCLA Department of Physics & Astronomy

COLLOQUIUM

Thursday, May 15th at 4 p.m.
1-434 PAB

Quantum Error Correction on Quantinuum's Trapped-Ion Quantum Computers

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To unlock the full potential of large-scale quantum computing, quantum error correction (QEC) is essential—it allows multiple noisy physical qubits to be encoded into more reliable logical qubits. In this presentation, we introduce Quantinuum's trapped-ion quantum computers, built on the quantum charge-coupled device (QCCD) architecture. We discuss how core features such as mid-circuit measurement and reset, all-to-all qubit connectivity, and industry-leading low error rates make these systems particularly well-suited for QEC. Leveraging these capabilities, we showcase several groundbreaking results: the first demonstration of real-time error correction, logical error rates below their physical counterparts, the teleportation of a logical qubit, and demonstrations of high-dimensional QEC codes.

Host: Eric Hudson

Refreshments at 3:30 p.m. on the PAB Patio. Undergraduates Welcome!