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**Detecting arbitrary quantum errors via stabilizer measurements**

MATTHIAS STEFFEN, IBM

Fault tolerant quantum computing requires error correction, which relies on the ability to extract information about the error that occurred rather than the states of the data qubits themselves. Stabilizer codes are an attractive solution to this problem in which the parity of the data qubits is measured with the aid of additional ancilla qubits, resulting in the "stabilization" of a specific quantum state. Here, we perform syndrome (or error) extraction and arbitrary error detection by using a 2x2 lattice of superconducting qubits and simultaneous quantum non-demolition stabilizer measurements. In this experiment one of the Bell states is stabilized, and any arbitrary single-qubit bit or phase error can be detected without destroying the stabilized Bell state. This lattice is a representative of a primitive tile for the surface code which is a promising approach towards quantum error correction.