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A hardware-efficient and scalable approach to fault-tolerant quantum computation

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I overview a series of recent theoretical proposals, and preliminary experimental developments, to enable a hardware-efficient paradigm for quantum error correction. These proposals are based on two main ingredients: 1- encoding of information in the so-called Schrödinger cat states of microwave radiation in a superconducting resonator, 2- application of dissipation/reservoir engineering methods to stabilize a manifold of quantum states where the information is encoded.

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