

Schematic diagram of the principle of superconducting solar container

How are superconducting quantum circuits calculated?

Throughout this work, the properties of superconducting quantum circuits are calculated by constructing and diagonalizing the circuit Hamiltonian. For the automated design problem and for spectral engineering problems more generally, the eigenenergies need to be calculated as a function of external degrees of freedom such as flux or charge offsets.

Are many-body interactions a problem in superconducting circuits?

In the field of superconducting circuits, a contemporary design challenge is the implementation of many-body interactions. Such interactions of more than two qubits commonly appear in effective spin models of quantum chemistry, quantum error mitigation schemes, and advanced driver Hamiltonians for quantum annealing [3](#), [17](#), [18](#), [19](#), [20](#), [21](#).

Why are superconducting circuits so popular?

Superconducting circuits have proven to be a particularly well-suited platform due to their design versatility [4](#). Their quantum behavior arises from the interaction of modes that are set by effective inductances, capacitances, and nonlinear Josephson junction elements in the circuit [5](#).

Can superconducting circuits build quantum processors?

Provided by the Springer Nature SharedIt content-sharing initiative Superconducting circuits have emerged as a promising platform to build quantum processors. The challenge of designing a circuit is to compromise between realizing a set of performance metrics and reducing circuit complexity and noise sensitivity.

What is superconductivity in physics?

Superconductivity occurs for magnetic fields and temperatures below the curves shown. Another important property of a superconducting material is its critical magnetic field $B_c(T)$, which is the maximum applied magnetic field at a temperature T that will allow a material to remain superconducting.

What are the properties of a superconducting material?

Another important property of a superconducting material is its critical magnetic field $B_c(T)$, which is the maximum applied magnetic field at a temperature T that will allow a material to remain superconducting. An applied field that is greater than the critical field will destroy the superconductivity.

Schematic diagram of the working principle Figure. 1 shows the basic working principle of a combustion driven thermoelectric power generator for various ...

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The schematic diagram of the entire superconducting quantum computer is depicted in Fig. 2a, where XY line acts as the microwave drive line while the SQUID is controlled by Z line.

Schematic diagram of the experimental apparatus of superconducting magnet. 1-Specimen frame 2-Water-cooling system 3-Heater, 4-Superconducting magnet 5 ...

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To demonstrate the application potentials of such kind of device, some preliminary testing data on a new prototype with larger permanent magnet and superconducting coil are ...

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The schematic diagram of the experimental configuration is displayed in Fig.1. The electromagnet produces a uniform magnetic field at the center where the ...

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It stores energy based on the principle of a continuous current flow in a superconductor even after the voltage across the points is removed. ...

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