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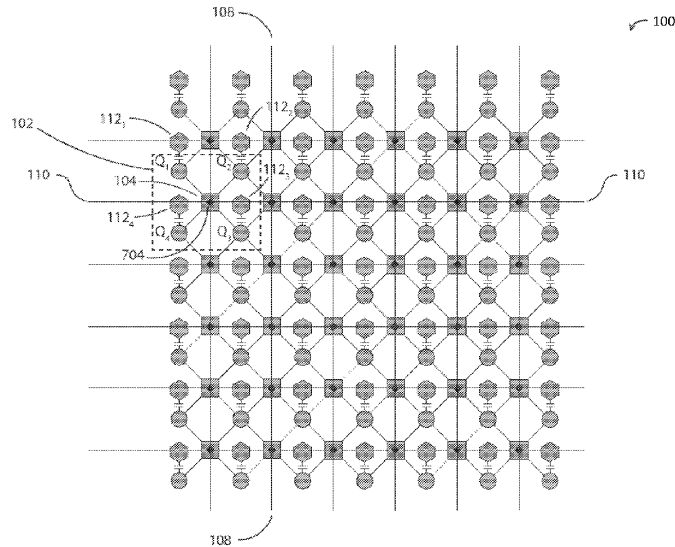


FIG. 1

(57) Abstract: A controller for a set of superconducting qubits includes a parametrically driven tunable coupler coupled to each superconducting qubit in the set of superconducting qubits comprising three or more superconducting qubits, a magnetic flux pump coupled to the parametrically driven tunable coupler, a first control line coupled to the magnetic flux pump, and a second control line coupled to the magnetic flux pump. The parametrically driven tunable coupler creates a parametric single superconducting qubit drive for a single superconducting qubit within the set of superconducting qubits or a parametric resonant interaction between a pair of superconducting qubits within the set of superconducting qubits when one or more first frequency signals on the first control line and one or more second frequency signals on the second control line satisfy a specified condition.

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