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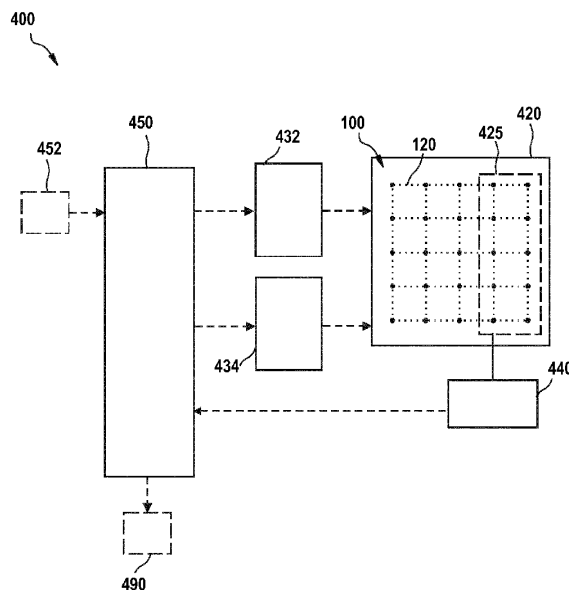
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(54) Title: METHOD AND APPARATUS FOR PERFORMING A QUANTUM COMPUTATION

Fig. 8



(57) Abstract: A method of performing a quantum computation includes providing a quantum system comprising a plurality of qubits. The method includes encoding a computational problem into a problem Hamiltonian of the quantum system. The problem Hamiltonian is a single-body Hamiltonian comprising a plurality of adjustable parameters. The encoding includes determining, from the computational problem, a problem-encoding configuration for the plurality of adjustable parameters. The method includes performing N rounds of operations, wherein $N \geq 2$. Each round of the N rounds of operations includes determining a sequence of unitary operators, wherein each unitary operator in the sequence is a unitary operator being a unitary time evolution of the problem Hamiltonian, wherein the plurality of adjustable parameters of the problem Hamiltonian are in the problem-encoding configuration, or a unitary operator being a product of two or more short-range unitary operators. Each round of the N rounds of operations includes evolving the quantum system

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by applying the sequence of unitary operators to the quantum system. Each round of the N rounds of operations includes performing a measurement of one or more qubits of the quantum system. The method includes outputting a result of the quantum computation.