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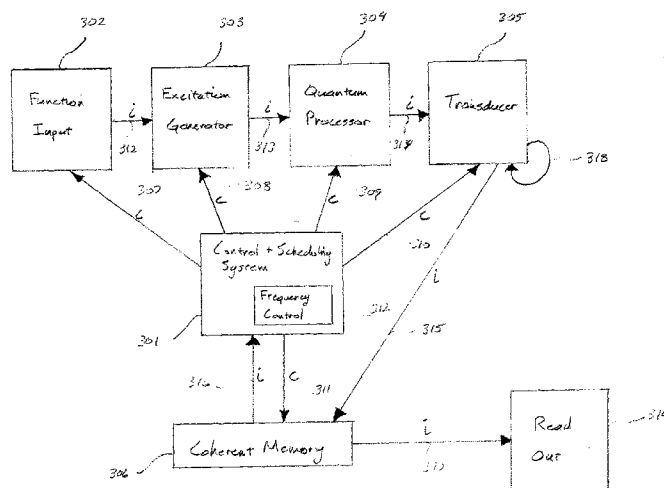
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(54) Title: METHOD AND PROGRAMMABLE APPARATUS FOR QUANTUM COMPUTING



(57) **Abstract:** A method and apparatus for quantum computing. A computer-program source code, data, and unsubstantiated output variables are converted into a class of computable functions by a program compiler. The computable functions are encoded, and a continualization method is applied to the encoded functions to determine a first-order, time-dependent, differential equation. Variational calculus is employed to construct a Lagrangian whose minimum geodesic is the solution for the first-order, time-dependent, differential equation. The Lagrangian is converted into a quantum, canonical, Hamiltonian operator which is realized as an excitation field via an excitation generator. The excitation field is repeatedly applied to a quantum processor consisting of a lattice of polymer nodes to generate an intensity-versus-vibrational-frequency spectrum of the lattice nodes. The average vibrational spectrum intensity values are used as coefficients in an approximating polynomial of the encoding function to determine the substantiated output variables, or program output.

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