Towards the Exact Quantum Computation Sequence in Axon Tracts

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Abstract

In this brief paper the authors present a methodology for finding the exact sequence of quantum gates that operates on nodal ions.

In [1] the authors provided a mechanism by which quantum computation can occur in the brain guided by metric perturbations. Here we provide the details. There is a paper by Ugo Boscain et. al. [2] in which the authors study the following equation:

$$i\frac{\partial\psi}{\partial t} = (-\triangle + V(x))\psi + uW(x)\psi. \tag{1}$$

The equation is the Schrodinger equation for the evolution of a wavefunction when subject to a perturbation $uW(x)$ in the environmental potential $V(x)$. The perturbation is used to control the wavefunction. As proposed in [1], the gravitational wave creates a changed environment for nodal ions via the environmental potential. Thus we may put the gravitational wave's impact in $uW(x)$.

It should be noted that this is the Schrodinger picture in which the state of the system evolves with time. In quantum computing theory, state evolution is performed by gates. Each gate corresponds to a Hamiltonian just as in the Schrodinger equation evolution is by the Hamiltonian operator. Given a Hamiltonian $\hat{H}$, one gets the corresponding unitary by the following expression:

$$U(t) = exp(-i\hat{H}t/\hbar) \tag{2}$$

and the Solovay-Kitaev algorithm [3] gives the decomposition of the unitary into a sequence of quantum computing gates. Thus once one has the perturbed Hamiltonian operator as per Equation (1), one can find the corresponding sequence of gates that are being applied to the nodal quantum system. As next steps, we intend to develop an analytical version of the solution of the equation presented in [4], interact it with metric perturbations as per the results in [5] and so develop the analytical description of $uW(x)$. Thereafter one can map out the exact gate sequence applied by each gravitational wave or combination thereof.

References

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