A Framework for Causal, Quantum Biology Consistent with Thermodynamics

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This poster explains a practical, theoretical framework for describing solvated biomolecules satisfifying the criterion of causality while at the same time correctly treating the non-equilibrium thermodynamics. Previous approaches based on the Shrodinger equation are not causal as the Shrodinger equation for evolutionary processes describes the diffusion of its wave function. Diffusion always has a Gaussian tail that extends over all space requiring infinite speed of propagation [1], [2]. In addition to treating the biomolecule causally, its immersion in a heat bath is treated by using a compatible, causal, geometrodynamical theory of fluids [3]. This allows the Born-Oppenheimer approximation to be avoided. The new approach ensures causality by using a differential topological and differential geometric method called quantum dynamical manifold theory (QDMT) [4], [5] [6]. The theory originated as a phenomenological approach to quantum mechanics along the lines of the Standard Model. The theory has been applied to the problem of superconductivity and the hydrogen atom including its nuclear quark field [4]- [7].

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