Title:	Quantum Treatment of Excitonic Energy Transfer in Photosynthesis
Authors:	Haritha, A. (/jspui/browse?type=author&value=Haritha%2C+A.)
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Abstract:	Energy transfer in light harvesting complexes of photosynthetic organisms shows quan- tum effects such as dephasing assisted transport and quantum coherence at room temperature. Engel et al. gave experimental proof of quantum coherence in Fenna- Matthews-Olson (FMO) complex of Green Sulfur bacteria. This system also shows high energy transfer efficiency. The mechanism behind this high efficiency is not com- pletely explained so far. In this thesis, we propose a new model to study the energy transfer dynamics of FMO-RC system. Along with molecular excitation, molecular vibrations are taken into account. We use Jaynes Cumming Hamiltonian to model the interaction between the electronic and vibrational states of the molecule. 40% efficiency is achieved in this model by incorporating a phononic bath in contact with the system.
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