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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 quantum 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 completely 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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