Abstract Submitted
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Fully quantum analysis of photosynthetic coherent energy absorption and transfer[1] OMAR GAMEL, HERMAN CHAN[2], GRAHAM FLEMING, K. BIRGITTA WHALEY, University of California, Berkeley, WHALEY-FLEMING TEAM — We simulate coherent energy transfer in photosynthetic light harvesting complexes with a diverse array of factors not previously considered together. We simulate both two level monomer and dimer systems being excited from the ground state through either thermal or coherent radiation. In doing so, we investigate the additional effects of a phonon bath on the energy transfer and rise time, simulated via the hierarchy equations of motion (HEOM). We incorporate an antiHermitian component to the Hamiltonian of varying magnitude, simulating excitation transfer to the unsimulated part of the extended system. We also investigate the population rise time and subsequent transfer. We find that the phonon bath can invert the order of excitation of dimeric eigenstates.

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