

Abstract Submitted
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Theoretical investigation of coherent exciton flow dynamics in light harvesting complex 2 (LH2)¹ SEOGJOO JANG, Queens College, City University of New York — The light harvesting complex 2 (LH2) is a peripheral antenna complex found in photosynthetic unit of purple bacteria. Numerous spectroscopic and computational studies demonstrated that quantum coherence plays an important role in the energetics and the dynamics of excitons created in LH2, but detailed and quantitative understanding is still missing regarding how the quantum coherence influences spectroscopic observables and how it boosts efficient energy transfer despite disorder and soft nature of the system. The present talk reports recent progress in the analysis of the single molecule spectroscopy (SMS) and application of resonance energy transfer theories, which account for multichromophoric and quantum coherence effects. These suggest that spectroscopic modeling allows development of reliable coarse-grained model for LH2 that can capture the major features of the excitons and that LH2 is a highly optimized natural system where the interplay between quantum coherence and disorder/fluctuation is maximally utilized.

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