Physics
AT QUEENS COLLEGE

Colloquium Notice

Seogjoo Jang

Queens College and the Graduate Center

How to utilize quantum coherence for efficient and robust transfer of electronic excitation energy in soft molecular environments?

Recent progress in femtosecond electronic spectroscopy brought renewed interest in the transfer of electronic excitation energies in large molecular complexes. In particular, there have been speculations that the energy transfer in some photosynthetic light harvesting complexes may involve wave-like coherent quantum dynamics motion rather than the rate behavior. However, to what extent the quantum coherence is detrimental to efficient and robust energy transfer has remained a controversial issue. Advanced level of theories and development of reliable quantum mechanical models are crucial for quantitative resolution of such issue. This talk will present a range of theories developed recently, which can address nonequilibrium effects, quantum coherence, and soft nature of molecular environments for a fairly general class of systems. The talk will also discuss exciton-bath modeling of photosynthetic light harvesting complexes and quantum dynamical calculation of energy transfer dynamics. These results suggest that quantum coherence can play a subtle but significant role in minimizing the negative effects of thermal fluctuations and disorder in order to create both efficient and robust energy transfer dynamics mechanism.

Monday
March 3, 2014
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326