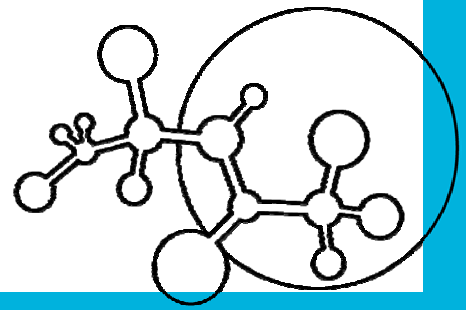




FRIAS

FREIBURG INSTITUTE FOR ADVANCED STUDIES
ALBERT -LUDWIGS -UNIVERSITÄT FREIBURG
SCHOOL OF SOFT MATTER RESEARCH



Quantum Efficiency Seminar and Colloquium Thomas Renger

Institute of Theoretical Physics,
University Linz

Theory of light-harvesting in photosynthetic pigment-protein complexes

In photosynthesis, light energy absorbed in light-harvesting pigment-protein complexes is transferred via an exciton mechanism to the reaction center where it is used to drive electron transfer reactions. The quantum efficiency of the transfer is close to 100 percent, that is, almost all excitons created reach the reaction center.

In order to bridge the gap between the crystal structures of these light-harvesting proteins and optical experiments probing their function, two essential problems need to be solved. On one hand, theories of optical spectra and excitation energy transfer have to be developed that take into account the pigment-pigment (excitonic) and the pigment-protein (exciton-vibrational) coupling on an equal footing. On the other hand, the parameters entering these theories need to be calculated from the structural data. I will give a summary of recent approaches to solve the above problems and discuss applications on a few light-harvesting and reaction center complexes revealing different strategies for efficient light-harvesting realized in these systems.

Date: Tuesday, June 7th, 2011 4:15 pm
Location: FRIAS Seminar Room, Albertstr. 19, Freiburg

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