



## ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

# PHYSICS COLLOQUIUM

**Thursday, 05 February 2015**

**17:00 -18:00**

**3<sup>rd</sup> Floor Seminar Room**

### **“Different Strategies for Collecting Light in Photosynthesis: Insights from Structure-Based Theory”**

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#### **Abstract**

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 [1]. I will give a summary of recent approaches to solve the above problems and discuss applications, which have revealed some building principles of photosynthetic antennae.

[1] T. Renger, F. Müh (2013) *Phys. Chem. Chem. Phys.* 15, 3348.