

Physics & Chemistry Joint Seminar

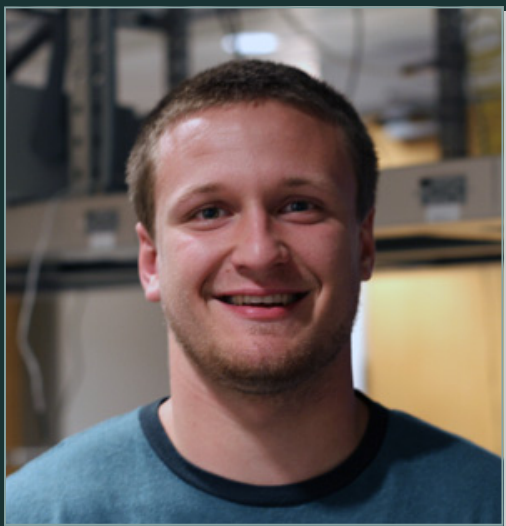
Two-Dimensional Electronic Spectroscopy Reveals Ultrafast Energy Transfer Events In Photosynthesis

Wednesday September 30

2:00 pm

RNS 210

Refreshments served!



Pete Dahlberg

Biophysical Sciences
Graduate Program at
The University of Chicago

B.A. & Sc.,
McGill University, 2011

Photosynthetic organisms have evolved exquisite control of photochemistry. They tune protein-chromophore and chromophore-chromophore interactions to adjust energy levels, create delocalized excited states for efficient FRET, and transfer excitations ~100 nm with nearly 100% quantum efficiency. Furthermore they exhibit real time control over energy transfer pathways in order to both optimize light harvesting and protect the organism from excess excitation. Understanding the design principles behind photosynthetic energy transfer necessitates the ability to observe these ultrafast processes in their native environment. I will present advances in two-dimensional electronic spectroscopy (2DES) that permit the acquisition of 2DES signals in the presence of intensely scattered light. These advances have made possible the observation of energy transfer in living cells of the purple bacteria, *Rhodobacter sphaeroides*. Timescales of 50 fs - 200 ps are recovered in a single experiment exhibiting both intra and inter complex relaxation and transfer.