



Department of Chemistry and Biochemistry
Physical Chemistry Seminar Series

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Department of Chemistry and Biochemistry ~ The University of Oregon
Monday, October 7, 2019 ~ 2:00 pm Tykeson Hall RM 140

"Using wave-packet interferometry to track intersite and interexciton coherence in an electronic excitation-transfer dimer"

We have developed a general framework for calculating and interpreting multi-dimensional electronic spectroscopy signals in terms of the wave-packet-shaping, amplitude-transferring effects of femtosecond laser pulses on time-dependent molecular states. We'll describe the treatment of two-dimensional wave-packet interferometry (WPI) experiments on an electronic energy-transfer (EET) system as quantum yield-weighted sums of contributing overlaps between multi-pulse wave packets. Example calculations will be presented for the cases of a spatially oriented, weakly- or strongly-coupled EET dimer. In a recent application of these ideas, we'll outline a proposed WPI-based strategy for directly tracking the evolution of inter-site or inter-exciton coherence in the same excitation-transfer dimer. We'll show example calculations for both weak and strong coupling cases with a varying number of vibrational modes and the special case of same-energy site states.

