2D Electronic Spectra of Marcus Electron Transfer

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We use non-equilibrium Green's functions to describe 2D spectra of Marcus electron transfer.

Coherent multi-dimensional spectroscopy enables direct measurement of the coherences associated with dynamic processes in photochemical systems. Most experiments have reported on energy migration, often in photosynthetic antenna systems. A few recent papers discuss electron transfer.

Based on a Keldysh contour formulation of four-wave mixing spectrosopy [1], recently extended to include molecular vibrations, we discuss theoretically the coherent features of the prototypical electron transfer – Marcus electron transfer.

The quantum coherences of electronic processes provide a new window into mechanistic understanding. These prospects will be discussed.

[1] T. Hansen, T.Pullerits, *J.Phys.B:At.Mol.Opt.* **45** (2012) 154014.